

March 29, 1949.

I. FLORMAN

2,465,721

CIGARETTE LIGHTER OR THE LIKE

Filed Oct. 4, 1945

2 Sheets-Sheet 1

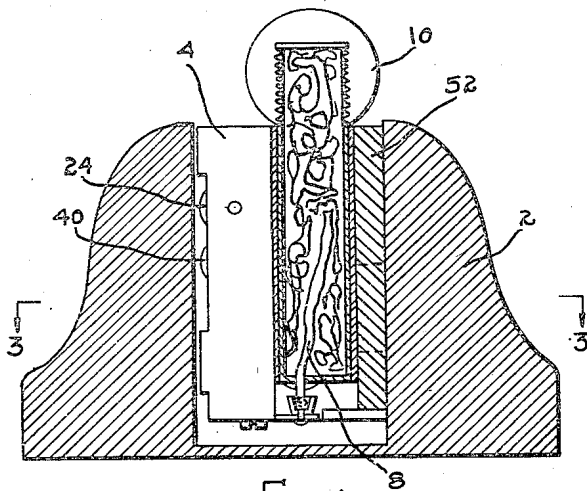


Fig. 1

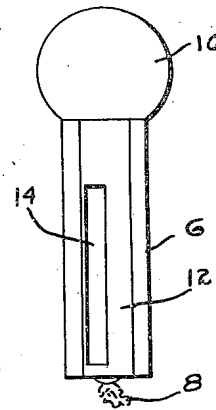


Fig. 2

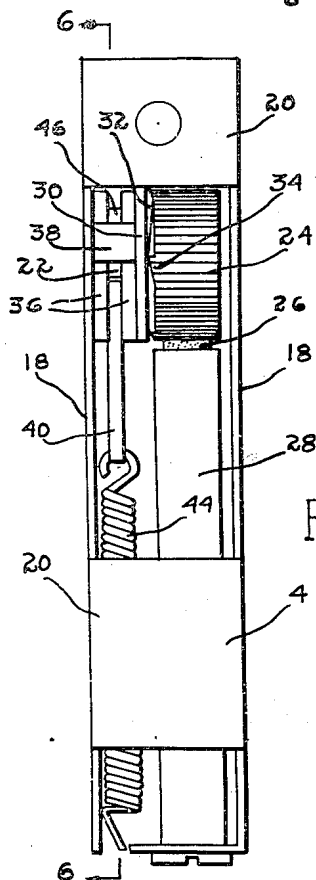


Fig. 4

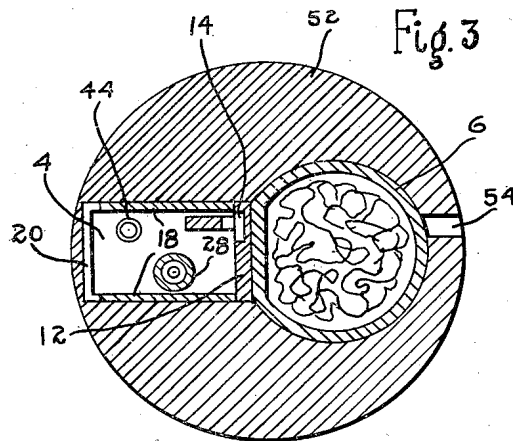
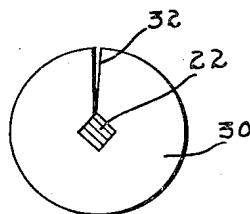


Fig. 3



INVENTOR.  
IRVING FLORMAN  
BY Bailey, Stephens & Huettig

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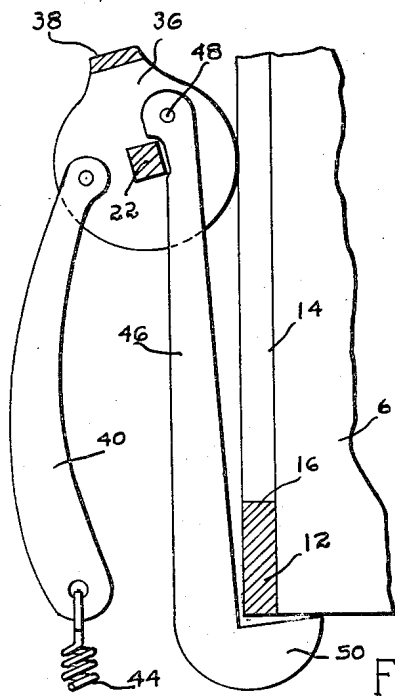


Fig. 7

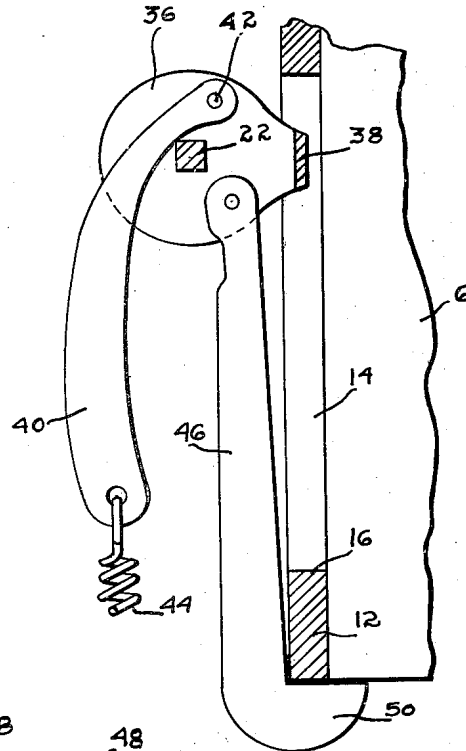


Fig. 8

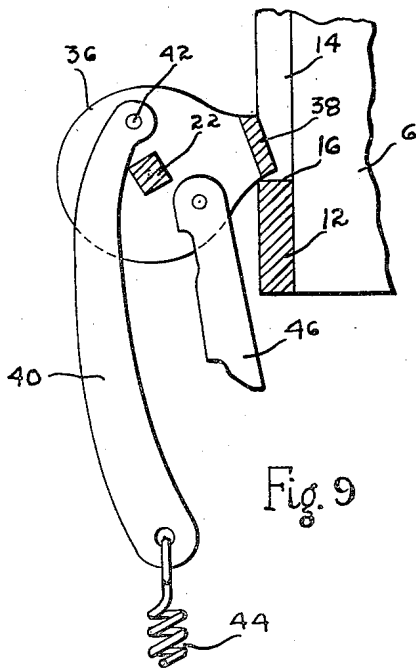


Fig. 9

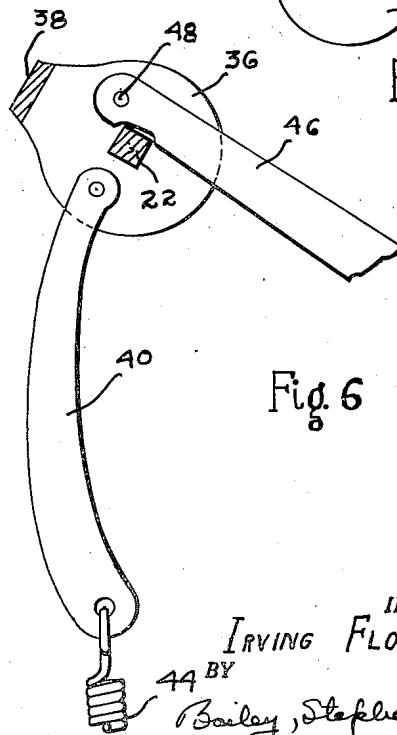


Fig. 6

INVENTOR.  
IRVING FLORMAN

BY  
Bailey, Stephens + Huetling

# UNITED STATES PATENT OFFICE

2,465,721

## CIGARETTE LIGHTER OR THE LIKE

Irving Florman, New York, N. Y.

Application October 4, 1945, Serial No. 620,296

6 Claims. (Cl. 67-4.1)

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The invention relates to cigarette lighters, and more particularly to table lighters of the pyrophoric type.

The primary object of the invention is to provide a simple and effective lighter, composed of a base and a torch member, in which removal of the torch from the base causes ignition of the torch. More particularly, the invention contemplates an arrangement for this purpose which is made with a few simple parts, without gears or complicated leverage systems.

Another object of the invention is to provide an arrangement of this type in which the operating parts are all carried by the flint wheel shaft, either being directly mounted on the shaft or being pivoted to members carried by the shaft.

A further object of the invention is to provide a device in which the greater part of the compression of the spring which operates the sparking mechanism is produced, during the return of the torch to the base, by a camming lever, while the final compression and the movement of the parts to lock position, is produced by a pull exerted on said lever through the longitudinal movement of the torch.

The invention more particularly includes an arrangement in which the energy for operating the flint wheel is stored up in a spring which is eccentrically connected to the flint wheel operating member, this spring connection being moved past a dead center position on the flint wheel shaft and being thrown back across dead center by removal of the torch.

Further objects and advantages of the invention will appear more fully from the following description especially when taken in conjunction with the accompanying drawings which form a part thereof,

In the drawings:

Fig. 1 is a vertical cross-section through a cigarette lighter embodying my invention.

Fig. 2 shows the torch member in side elevation.

Fig. 3 is a horizontal cross-section on the line 3-3 of Fig. 1.

Fig. 4 is an end view of the igniting mechanism.

Fig. 5 is a detail view of the pawl member.

Fig. 6 shows, in cross section substantially on the line 6-6 of Fig. 4, certain of the movable parts in the position which they occupy when the torch is removed.

Fig. 7 is a similar view showing the torch partially inserted in the base.

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Fig. 8 shows the parts with the torch fully inserted.

Fig. 9 shows the parts as the torch is being withdrawn from the base.

The lighter in general comprises a base 2 containing the igniting mechanism 4 and a torch member 6. The base is preferably of substantial weight so as to hold the lighting mechanism immovable when the torch is withdrawn in operation.

The torch body is hollow and contains cotton or other absorbent material, while a wick 8 projects from its lower end. On its upper end is threaded a knob or handle member 10, which can be removed to allow fuel to be poured in. Along one face is a flat strip 12 having therein a longitudinally extending groove 14 terminating just short of the lower end, at 16. The mode of cooperation of this groove with the igniting mechanism will be described below.

The igniting mechanism is mounted in a frame which is secured in the base 2. This frame has parallel side walls 18 connected by transverse strips 20 at the back. The front edges of the walls engage strip 12 on the torch. Shaft 22 mounted in side walls 18 carries rotatably thereon a flint wheel 24. Flint 26 mounted in flint tube 28 is pressed against the wheel by a spring in the usual manner.

Shaft 22 has a squared portion (see Figs. 4 to 9) on which is mounted next to the flint wheel a disc 30. This disc is slit radially at 32, and one edge of the slit is pressed aside to form a catch or pawl which can engage with ratchet teeth 34 formed on the side of the flint wheel. In this way, when the shaft 22 is turned in one direction (counterclockwise in Figs. 6 to 9), the disc 30 will cause flint wheel 24 to turn with it; while in the other direction disc 30 causes no movement of the flint wheel.

Also mounted on the square portion of the shaft are spaced discs 36 which are connected by a cross piece 38 forming a lug extending beyond the peripheries of the discs. This lug is located opposite and is capable of fitting into the slot 14 in the torch member. A lever 40 having a curve in its upper end extends between the discs and is pivoted thereto at 42. A coil spring 44 is connected between the free end of spring lever 40 and the frame. A second lever 46 is pivoted between the discs at 48. Lever 46 has a notch opposite shaft 22, which limits its clockwise movement with respect to the shaft, and has at its free end a hook 50. Base 2 includes a cylindrical body 52 in which the igniting mechanism

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frame is mounted, and this body has an opening into which the torch is inserted. A slot 54 in the body receives the end of lever 46 in the position shown in Fig. 6.

The mechanism described above operates as follows:

When the torch is removed, the parts occupy the position shown in Fig. 6, in which spring 44 has pulled lever 40 downward until pivot 42 is directly below the center of shaft 22, and lever 46 extends across the torch-receiving well into slot 54.

As the torch is introduced, it engages lever 46 and pushes it downwardly and aside. This motion, through engagement of the lever with the shaft, turns discs 36 until the parts reach the position shown in Fig. 7, when the torch engages hook 50 on lever 46; the spring 44 being then partly stretched.

Further pressure on the torch exerts a push on hook 50 and a longitudinal pull on lever 46, causing the discs 36 to turn further to the position shown in Fig. 8. It will be noted that in this position pivot 42 of lever 40 has moved to the right of the vertical plane through the axis of shaft 22, or beyond dead center, so that spring 44, although now fully stretched, holds the parts in this position. Also, lug 38 has moved into the slot 14 in the torch member.

During all these operations, flint wheel 24 has not been turned because of its ratchet connection with disc 30.

As the torch is withdrawn from the position shown in Fig. 8, it moves freely until the lower edge 16 of slot 14 engages lug 38. Further upward pull on the torch then causes the discs 36 to turn counterclockwise (Fig. 9) until pivot 42 passes to the left of the vertical plane of the axis of shaft 22, or beyond its dead-center position. Spring 44 now pulls downward on lever 40 and turns the discs with a snap action. This rotation through pawl disc 30 rotates flint wheel 24 and throws sparks on the wick as it is passing opposite the flint, thus igniting the wick.

After this operation, the parts resume the position shown in Fig. 6 and are ready for another similar series of operations.

Of course, the withdrawal of the torch is accomplished by a quick, continuous motion. The reinsertion of the torch into the base will extinguish the wick if it has not already been blown out.

While I have described herein one embodiment of my invention, I wish it to be understood that I do not intend to limit myself thereby except within the scope of the appended claims.

I claim:

1. In a cigarette lighter, a body portion having a torch receiving well therein and having igniting means carried thereby adjacent the well, a torch member slidable into and out of the well, said igniting means including a flint wheel, means to press a flint against the flint wheel, a rotatable member having a one-way connection with said flint wheel, a spring, means connecting said spring to said member at a point remote from its axis and to said body member, a lever pivoted to said member and having a limited swinging movement with respect thereto, said lever extending into the well, said torch and lever having cooperating means whereby movement of the torch into the well first turns the lever to rotate said member and stress the spring and thereafter exerts a longitudinal pull on the lever to turn said member further until the point of connection of

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the spring passes a dead center position and the spring is locked against release, and means operated by withdrawal of the torch from the well to turn said member in the opposite direction until the point of connection of the spring moves past the dead center position, whereby the spring rotates the flint wheel to ignite the torch.

2. In a cigarette lighter, a body portion having a torch receiving well therein and having igniting means carried thereby adjacent the well, a torch member slidable into and out of the well, said igniting means including a flint wheel, means to press a flint against the flint wheel, a rotatable member having a one-way connection with said flint wheel, a spring, means connecting said spring to said member at a point remote from its axis and to said body member, a lever pivoted to said member and having a limited swinging movement with respect thereto, said lever extending into the well, said torch and lever having cooperating means whereby movements of the torch into the well first turns the lever to rotate said member and stress the spring and thereafter exerts a longitudinal pull on the lever to turn said member further until the point of connection of the spring passes a dead center position and the spring is locked against release, said member having a lug thereon which lies within the well in such position of the member, and said torch having a longitudinal slot therein mating with said lug, the bottom wall of said slot being adapted to engage said lug as the torch is withdrawn from the well to turn said member in the opposite direction until the point of connection of the spring moves past the dead center position, whereby the spring rotates the flint wheel to ignite the torch.

3. In a cigarette lighter, a body portion having a torch receiving well therein and having igniting means carried thereby adjacent the well, a torch member slidable into and out of the well, said igniting means including a shaft, a flint wheel, means to press a flint against the flint wheel, a pair of spaced discs on said shaft having a one-way connection with said flint wheel, a curved lever extending between said discs and pivoted thereto, a spring connected to the free end of the lever and to the body portion, an operating lever extending between said shafts and pivoted thereto, said operating lever having a part engageable with the shaft to limit its swinging movement and extending into said well and having a hook portion, a member connecting said discs and lying outside the peripheries thereof to form a lug, said torch upon insertion into the well first turning said operating lever to rotate said discs and stress the spring and thereafter engaging said hook portion to exert a longitudinal pull on the lever to turn said member further until the point of connection of the spring passes a dead center position and the spring is locked against release, said torch having a longitudinal slot therein mating with said lug, the bottom wall of said slot being adapted to engage said lug as the torch is withdrawn from the well to turn said discs in the opposite direction until the point of connection of the spring moves past the dead center position, whereby the spring rotates the flint wheel to ignite the torch.

4. In a cigarette lighter, a body portion having a torch receiving well therein and having igniting means carried thereby adjacent the well, a torch member slidable into and out of the well, said igniting means including a shaft, a flint wheel, means to press a flint against the flint wheel, a pair of spaced discs on said shaft hav-

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ing a one-way connection with said flint wheel, a curved lever extending between said discs and pivoted thereto, a spring connected to the free end of the lever and to the body portion, an operating lever extending between said shafts and pivoted thereto, said operating lever having a part engageable with the shaft to limit its swinging movement and extending into said well and having a hook portion, said torch upon insertion into the well first turning said operating lever to rotate said discs and stress the spring and thereafter engaging said hook portion to exert a longitudinal pull on the lever to turn said member further until the point of connection of the spring passes a dead center position and the spring is locked against release, and means operated by withdrawal of the torch from the well to turn said discs in the opposite direction until the point of connection of the spring moves past the dead center position, whereby the spring rotates the flint wheel to ignite the torch.

5. In a cigarette lighter comprising a body portion having igniting means therein, a torch movable with respect to the body portion, said igniting means including energy storing means, a shaft, a pair of discs on said shaft, an operating lever extending between said shafts and pivoted thereto, said operating lever having a part engageable with the shaft to limit its swinging movement and extending into said well and having a hook portion, said torch upon insertion into the well first turning said operating lever to rotate said discs and stress the spring and thereafter engaging said hook portion to exert a longitudinal pull on the lever to turn said member further until the point of connection of the spring passes a dead center position and the spring is locked against release, and means operated by withdrawal of the torch from the well to turn said discs in the opposite direction until the point of connection of the spring moves past the dead center position, whereby the spring rotates the flint wheel to ignite the torch.

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6. In a cigarette lighter comprising a body portion having igniting means therein, a torch movable with respect to the body portion, said igniting means including energy storing means, a shaft, a pair of discs on said shaft, an operating lever extending between said shafts and pivoted thereto, said operating lever having a part engageable with the shaft to limit its swinging movement and extending into said well and having a hook portion, a member connecting said discs and lying outside the peripheries thereof to form a lug, said torch upon insertion into the well first turning said operating lever to rotate said discs and stress the spring and thereafter engaging said hook portion to exert a longitudinal pull on the lever to turn said member further until the point of connection of the spring passes a dead center position and the spring is locked against release, said torch having a longitudinal slot therein mating with said lug, the bottom wall of said slot being adapted to engage said lug as the torch is withdrawn from the well to turn said discs in the opposite direction until the point of connection of the spring moves past the dead center position, whereby the spring rotates the flint wheel to ignite the torch.

IRVING FLORMAN.

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