March 22, 1949. L. BOLLE 2,465,004

PYROPHORIC LIGHTER

Filed Aug. 1, 1947 2 Sheets-Sheet 1

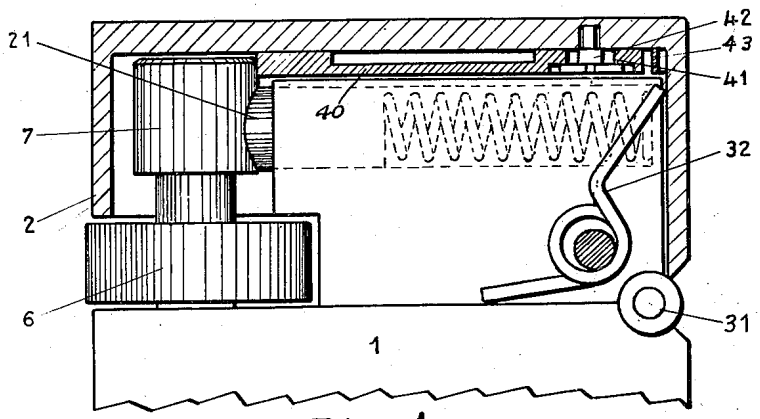


Fig 1

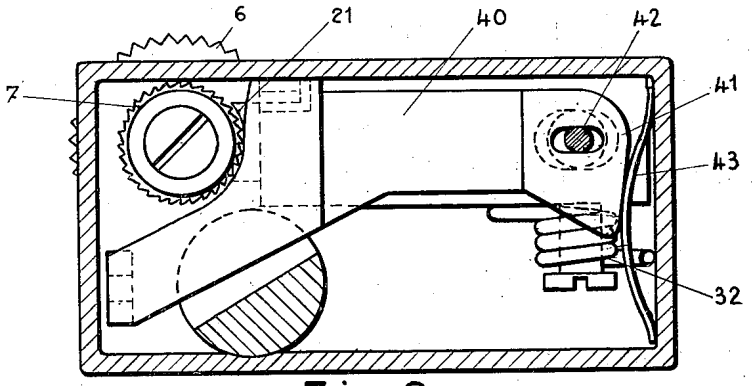
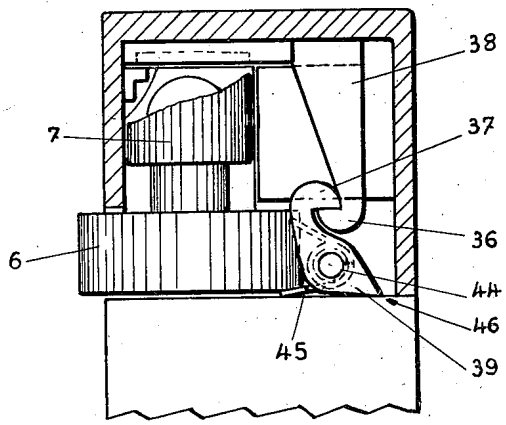


Fig 2

Fig.3



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PYROPHORIC LIGHTER

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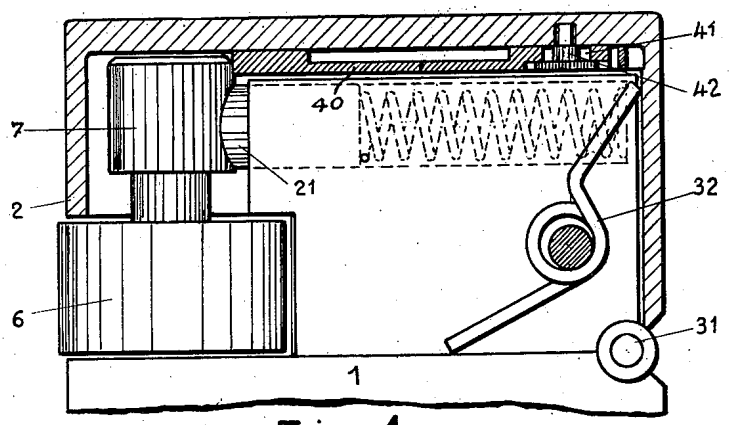

Fig. 4

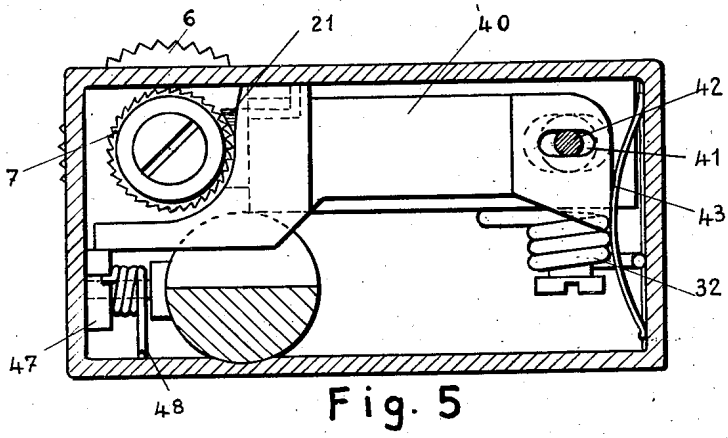

Fig. 5

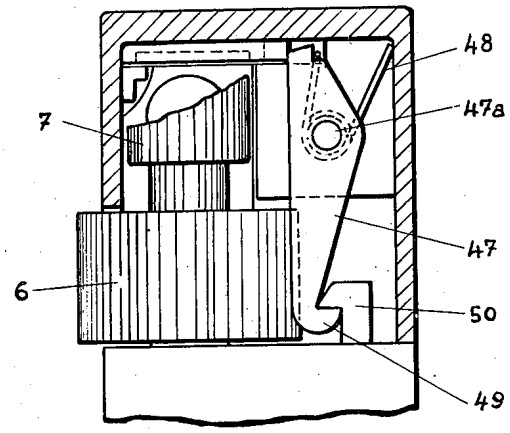

Fig. 6

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UNITED STATES PATENT OFFICE

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PYROPHORIC LIGHTER

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In Switzerland April 24, 1939

Section 1, Public Law 690, August 8, 1946
Patent expires April 24, 1959

4 Claims. (Cl. 67—7.1)

1

Pyrophoric lighters are in existence which are provided with a friction wheel secured to a rotary actuating member mounted in the body of the lighter and of which a portion of the periphery is accessible. These lighters, which are considerably appreciated by users, are in general not provided with a mechanism which enables the opening of the cover and the ignition of the lighter to be effected simultaneously. Thus the user must effect two separate successive operations:

1. Effect the opening of the cover;
2. Actuate the friction wheel so as to produce ignition.

Some lighters of the type referred to, have been fitted with a mechanism producing the automatic opening of the cover when the friction wheel is actuated. These mechanisms however are relatively complicated and do not give entire satisfaction, their members being too delicate.

The pre ent invention has for its subject a mechanism for the automatic control of the opening of a cover subjected to the action of a spring and pivoted on the fuel container of a lighter and which is provided with a friction wheel secured to a rotary actuating member mounted on the side of the said container and of which a portion of its periphery is accessible, a retaining member mounted on the said container and cooperating with a catch mounted in the cover for retaining the latter against the action of its spring and actuating members for said catch for producing the opening of the cover, these actuating members being mounted in the cover. This mechani-m is distinguished from known mechanism, referred to above, by the fact that it is provided with a lever mounted on the inner face of the top wall of the cover and subjected to the action of a spring tending to hold, in the closed position of the cover, a part of this lever in contact with the friction wheel, the said lever being connected mechanically to the catch in such a manner that actuation of the actuating member of the friction wheel produces by friction the pivoting of the said lever and the disengagement of the catch from the retaining member so that the cover opens automatically under the action of its spring.

Two forms of construction of the subject of the invention are shown diagrammatically and by way of example in the accompanying drawings, wherein:

Fig. 1 is a side view, with a portion in section, of a first form of construction of the device.

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Fig. 2 is a plan view of this device, the upper part of the cover being broken away.

Fig. 3 is a front view of this same form of construction with a portion thereof in section.

Figs. 4 to 6 are similar views to those shown in Figs. 1 to 3 of a second form of construction.

According to Figs. 1 to 3, the cover 2, hinged at 31 to the body 1 of the lighter, is subjected to the action of a spring 32 which tends to open it. The friction wheel 7, in contact with the pyrophoric flint 21, is actuated by hand by means of the wheel 6. The cover 2 is retained in its closed position by two hooks 36, 37 engaging with one another and formed on the ends of two levers 38, 39.

The first portion of the movement imparted to the wheel 6 for the purpose of igniting the lighter, produces the opening of the cover 2 under the action of the spring 32. The control of the opening of the cover is effected in the following manner: The actuation of the wheel 6 produces the rotation of the friction wheel 7 which is secured thereto. The latter drives by friction a lever 40, provided with a rigid arm 38 having the hook 36. The lever 40 is pivoted on a pivot screw 42 secured on the inner face of the top wall of the cover and passes through a slot 41 provided in the lever 40.

It will be seen that the lever 40, driven by friction, by the friction wheel 7 against the action of a spring 43, which tends always to return it into the same starting position, produces a movement of the hook 36 relatively to the hook 37.

This movement releases the cover 2 which opens under the action of its spring 32.

When the cover is open the spring 43 pushes the lever 40 forwardly until the pivot screw 42 meets the end of the slot 41. Further, the lever 40 carries out at the same time a rotary movement about the pivot screw 42, the pressure of the spring 43 being eccentric relatively to the pivotal axis of the lever 40. This rotation thus moves the lever 40 into the starting position shown in the drawing.

During the closing of the cover 2, by pivoting about its pivot 41 located in a plane which is clearly below that of the lever 40, the front face of the latter passes along an inclined path relatively to the friction wheel 7. This front face of lever 40, during the last portion of the closing movement of the cover, thus comes into contact with the friction wheel 7. The lever 40 is thus slightly repelled against the action of the spring 43.

In order to enable one of the hooks 36, 37 to be retracted without moving the lever 40 from its

starting position (Figs. 1 to 3), the lever **39** is pivoted on a pivot **44** and is subjected to the action of a spring **45** tending to hold a nose **46** in contact with the body **1** of the lighter. The spring **45** is sufficiently weak relatively to the spring **43**, so that, during the closing of the cover, the lever **39** is repelled, whilst the arm **38** remains in position.

Figs. 4 to 6 show a second form of construction differing slightly from that described above. In fact the lever **40** is mounted in a similar manner; however its end acts on a lever **47** pivoted on a pivot **47***a* secured to the cover **2**. The lever **47** is subjected to the action of a spring **48** tending to hold it in contact with the end of the lever **40**.

A hook **50** secured rigidly to the body **1** of the lighter is adapted to come into contact with a hook **49** provided on the end of a lever **47**. During the closing of the cover **2**, the hook **47** is repelled against the action of a spring **47***a* by the hook **50**.

From the foregoing and by examination of the accompanying drawing, it will be seen that the mechanism forming the subject of the invention is of extremely simple and robust construction. In fact all its constituent parts may be obtained by simply cutting and bending and none of them require machining for finishing.

The mechanism is thus of a very low cost of manufacture, the more so as its mounting in the cover is very rapid.

This great simplicity of the mechanism, as also the slight precision of the constituent parts necessary for ensuring the operation, are principally due to the fact that the mechanical connection between the actuating members and this mechanism is effected by a friction coupling of which one of the parts is formed by the friction wheel, whilst the other is formed by a part of a lever subjected to the action of a spring and capable of being moved relatively to its pivotal axis and in the direction of the said friction wheel. Further, the disengagement of the two parts of this coupling is effected automatically when the lever has been moved angularly through a predetermined distance and that the pivot of this lever bears against the end of the slot provided in this lever and with which it engages.

Two modified forms of construction of the mechanism forming the subject of the invention have been described above by way of example, but it will be understood that all the members and elements described may be replaced directly by their equivalents.

I claim:

1 In a pyrophoric lighter the combination with a fuel container, of a cover hingedly mounted on said container, a spring located between said container and said cover, said spring being adapted to urge said cover into an open position, a rotary actuating member mounted on said container towards one side thereof, a portion of the periphery of said rotary member being accessible for operation, a friction wheel secured to said rotary member, a retaining member mounted on said container, a catch mounted in said cover, said retaining member co-operating with said catch so as to retain said cover in its closed position against the action of said spring, actuating means operatively associated with said catch and with said friction wheel, said actuating means being mounted in said cover, said actuating means comprising a lever mounted on the inner face of the top wall of said cover, said lever being capable of carrying out movements of rotation and translation, said lever being adapted to engage with said friction wheel, and a spring mounted in said cover and normally urging said lever into engagement with said friction wheel, said lever being operatively connected to said catch, the arrangement being such that when actuating said actuating member, said friction wheel by frictional engagement with said lever, imparts by friction an angular movement to said lever which in turn effects the disengagement of the catch from the retaining member, whereby the said cover is opened automatically by the action of said spring.

2 In a lighter according to claim 1, the provision of a pivot secured to said cover in the interior thereof, said lever having a slot therein, said slot being engaged by said pivot, said slot extending substantially along a line which passes through the axis of said friction wheel and the axis of said pivot.

3. In a pyrophoric lighter according to claim 1, the provision of a projection on said lever, said projection forming said catch, said retaining member comprising a lever pivotally mounted on said container, and a spring associated with said lever, said spring normally holding said retaining member in the retaining position, but enabling said retaining member to recede from the catch of said lever so as to allow said catch to engage with said retaining member when the cover is moved from an open into a closed position.

4. In a pyrophoric lighter according to claim 1, said retaining member being secured rigidly to said container, said catch comprising a double armed lever, a pivot in said container, said double armed lever being pivotally mounted on said pivot, one arm of said double armed lever co-operating with one end of said lever engaging said friction wheel, the other end of said double armed lever being adapted to co-operate with said retaining member, and a spring normally urging said other end in engagement with said retaining member.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,828,111	Hardy	Oct. 20, 1931
1,834,007	Segal	Dec. 1, 1931