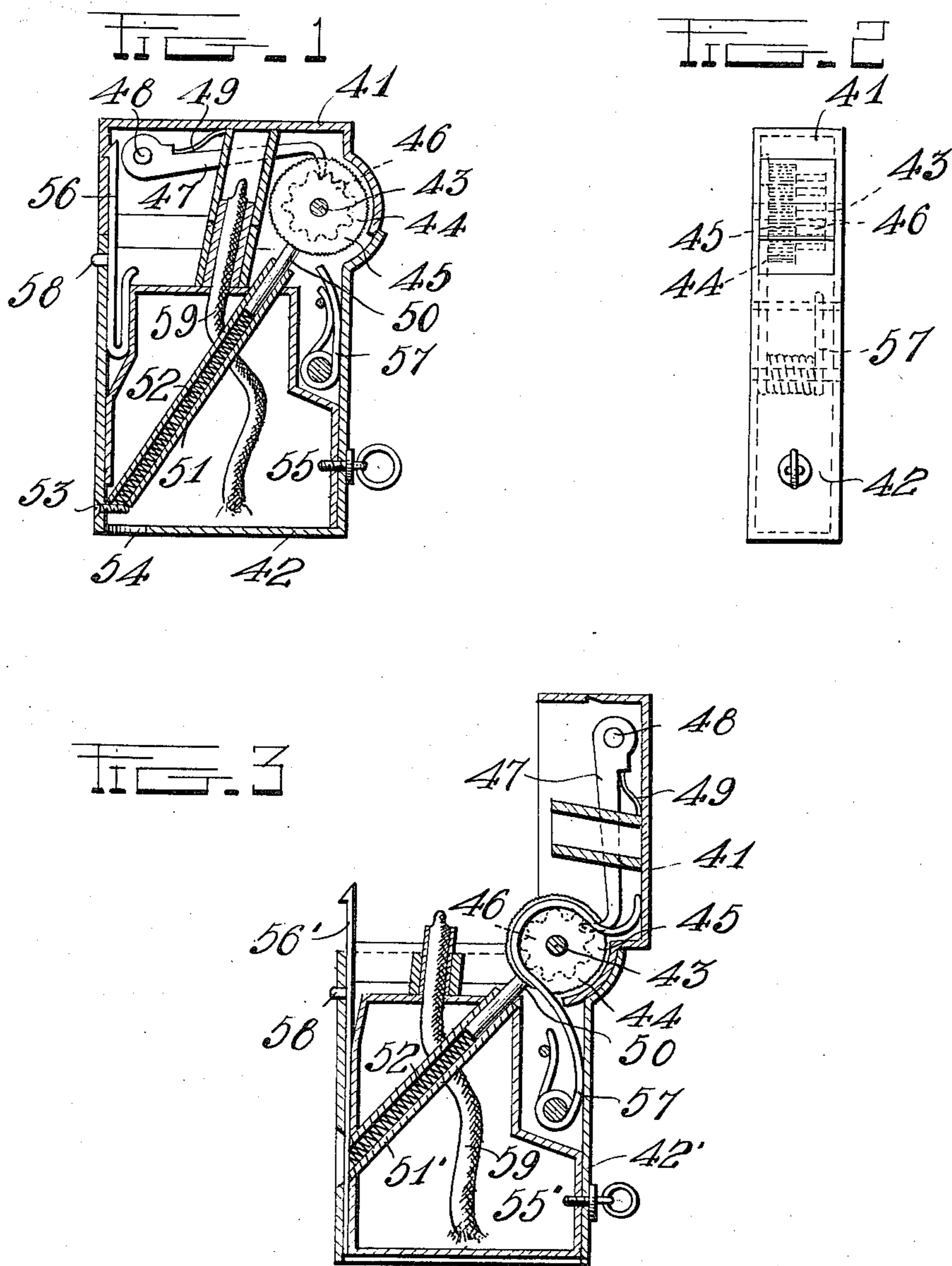


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IGNITER WITH SPARK EMITTING MASS.
APPLICATION FILED OCT. 21, 1909.

983,238.

Patented Jan. 31, 1911.



Witnesses
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UNITED STATES PATENT OFFICE.

JACQUES KELLERMANN, OF BERLIN, GERMANY.

IGNITER WITH SPARK-EMITTING MASS.

983,238.

Specification of Letters Patent. Patented Jan. 31, 1911.

Application filed October 21, 1909. Serial No. 523,839.

To all whom it may concern:

Be it known that I, JACQUES KELLERMANN, manufacturer, citizen of Hungary, subject of the King of Hungary and Emperor of Austria-Hungary, residing at Berlin, in the Kingdom of Prussia and Empire of Germany, have invented new and useful Improvements in Igniters with Spark-Emitting Masses, of which the following is a specification.

My invention relates generally to igniters of that kind in which sparks are produced by friction and transmitted to a combustible body, such as a slow-match or a wick saturated with liquid fuel, and particularly to that kind of igniters in which the spark-emitting mass is formed by a metal or alloy which scintillates when rubbed or scraped such as particularly, the alloys of cerium and the like.

A primary object of my invention is to provide igniters of the above described kind in which the arrangement of the spark-emitting body and the harder rubbing or scraping body is such that these are located in a particularly favorable position relatively to the combustible body for igniting the latter at the moment when sparks are emitted. To this end, I preferably arrange the rubbing or scraping body such as a sharpened piece of steel close beside the combustible body, whereas I arrange the spark-emitting mass in such a manner that it can be moved relatively to the scraper and the sparks produced fall onto the combustible body. In order to assure that the sparks impact the combustible body in this manner, I prefer to arrange the igniferous parts in such a position relatively to the combustible body that the direction of motion while producing sparks by friction must cut the zone of the flame to be produced.

Further, for assuring the transmission of the sparks to the combustible body it is important to arrange that at the moment of ignition the spark-emitting mass, such as a pyrophorus alloy or the like, is located directly at or close to the combustible body, it being indifferent whether it is moved, or the scraper, or both simultaneously. For obtaining the same action, further, according to my invention I prefer to arrange the one of the parts required for producing sparks, preferably the scraper, in a chamber in which the fuel evaporating from the combustible body collects in gaseous form

when the igniter is closed, so that the sparks produced when rubbing said part with the other part required for producing sparks, preferably the pyrophorus metal, are produced in this chamber itself filled with combustible gases, and consequently these gases are ignited directly and on their part can ignite the fuel on the wick.

A further object of my invention is to provide handy, durable igniters of this kind which can be manufactured cheaply.

Additional features of my invention will be understood from the following specification in connection with the accompanying drawings and from the claims.

Figure 1 is a longitudinal section through a closed pocket-igniter having automatic ignition; Fig. 2 is an end elevation of the same; Fig. 3 is a longitudinal section of the same opened.

The device illustrated is substantially distinguished by ignition being caused automatically as soon as the lid automatically flies up under the action of a spring. To this end, on the axle around which the lid rotates is arranged a loose friction wheel driven by means of a pawl when the lid opens. The loose arrangement of the wheel causes it to be driven only in the one direction, *i. e.* when opening the lid, whereas it remains stationary when closing the lid so that no sparks are produced during this movement.

Referring to the drawings, the lid 41 is connected with the bottom part 42 of the casing by an axle 43, on which is a loose wheel 44 of steel or the like having on its periphery two kinds of tothing beside one another. Tothing 45 corresponds to the ribs or teeth of a file and serves for scraping the pyrophorus mass, whereas the second tothing 46 comprises ratchet-teeth. In the latter engages a pawl 47 attached revolvably at 48 in lid 41 and pressed by a spring 49 with its free end against tothing 46. In these constructional forms the pyrophorus mass 50 is shaped like a pin and mounted movably in a tube 51 (Fig. 1) or 51' (Fig. 3). Said pin is pressed in its casing from below by a spring 52 against the file-like part 45 of wheel 44 so that ignition takes place certainly even when pin 50 wears.

In the form according to Figs. 1 and 2 there serves as abutment for spring 51 a screw 53, after removing which spring 52 and pin 50 can be readily removed through

the hole 54 in casing 42 and exchanged. In this constructional form the fuel reservoir is formed by casing 42 itself. In the constructional form according to Fig. 3, on the contrary, a special fuel reservoir 55' removable from the casing 42' is provided thereby enabling small repairs to be made easier. In this instance tube 51' for the pyrophorus pin 50 is built into the fuel reservoir itself and traverses the same. As abutment for spring 52 leaf spring 56' serves which holds the lid 41 in its closed position. A similar spring 56 is also provided in the form according to Figs. 1 and 2.

For opening the lid automatically a spring 57 is arranged on the rear wall of casing 42 beside the fuel reservoir; this spring is shown broken off in Fig. 1 but in reality presses against lid 41 in the manner readily understood from Fig. 3, so that by pressing on button 58 of the spring 56 or 56' lid 41 is released and is subjected to the action of spring 57. Wheel 43 is driven by its engagement with pawl 47 and the file-like part of the same turns against the pyrophorus pin 50 forming sparks which fly onto the wick 59. Instead of this wick an impregnated slow-match can be employed when, obviously, the fuel reservoir can be omitted, or I may arrange slow-match and wick saturated with fuel beside one another in the same igniter.

By arranging the file-wheel directly on the axle of the lid and employing the pawl, the intermediate gearing required otherwise is superfluous, the mechanism is simplified, and the igniter cheapened and made lighter. Also it is possible only in this manner to use one single wheel for providing the ratchet-teeth and the file-teeth or ribs, making a special coupling superfluous. Instead of the metal file-wheel I may, however, employ a stone wheel for producing sparks.

Having now described my invention what

I claim and desire to secure by Letters Patent of the United States is:

1. In an igniter, the combination with a casing, and a cover, of an axle pivotally connecting the cover with the casing, a scraping wheel on said axle, means whereby movement of the cover will cause rotation of the axle, and a pyrophorus body bearing upon the scraping wheel.

2. In an igniter, the combination of a casing, a cover therefor, an axle pivotally connecting the cover to the casing, a scraping wheel on said axle, a ratchet wheel on the axle, a spring-pressed pawl carried by the cover and engaging said ratchet wheel, and a pyrophorus body within the casing bearing against the scraping wheel.

3. In a pocket-igniter a casing, a combustible body within said casing, a cover for said casing, an axle for pivotally connecting said cover with said casing, a scraping wheel loosely arranged on said axle, a pawl arranged within said cover, a spring pressing said pawl into engagement with said wheel when the igniter is closed.

4. In a pocket-igniter a casing, a combustible body within said casing, a cover for said casing, an axle for pivotally connecting said cover with said casing, a scraping wheel loosely arranged on said axle, two kinds of toothing beside one another on the periphery of said wheel, the one kind corresponding to the ribs of a file and the second toothing comprising ratchet-teeth, a pawl pivotally arranged within said cover and engaging said ratchet-teeth, a locking device for said cover, a spring pressing against the inside of said cover and tending to open it.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JACQUES KELLERMANN

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPF.