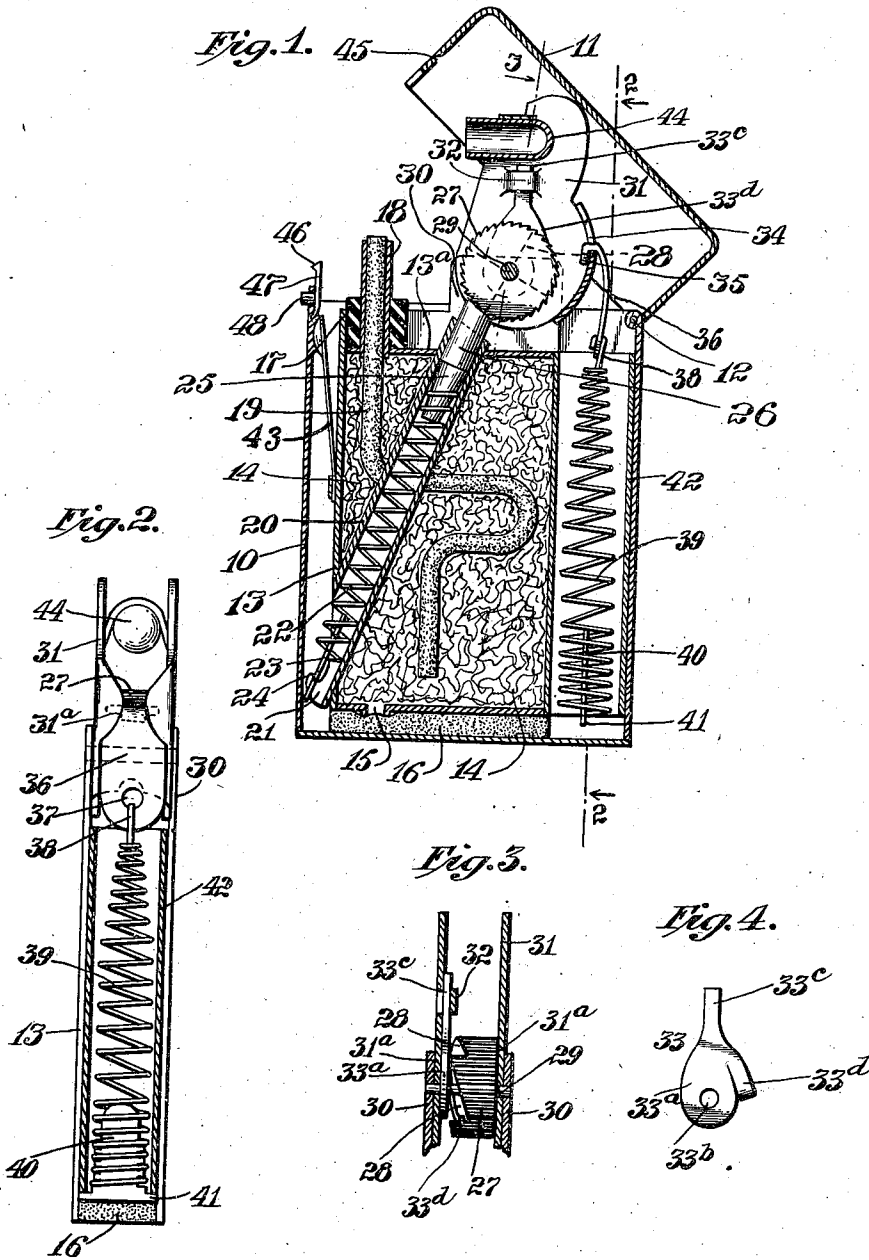


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AUTOMATIC IGNITER.
APPLICATION FILED MAY 27, 1911.

1,028,462.

Patented June 4, 1912.



Attest:
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UNITED STATES PATENT OFFICE.

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AUTOMATIC IGNITER.

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Specification of Letters Patent.

Patented June 4, 1912.

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To all whom it may concern:

Be it known that I, DAVID HEYMAN, a citizen of the United States of America, residing at No. 342 West Fourteenth street, New York city, in the county and State of New York, have invented certain new and useful Improvements in Automatic Igniters, of which the following is a specification.

My invention relates to automatic igniters of the type embodying a pyrophoric sparking medium which, when subjected to friction, gives off sparks which pass to a suitable combustible substance adapted to sustain a flame.

One object of my invention is to provide means whereby the sparking medium may be inserted in and removed from the igniter in a simpler manner than heretofore.

A further object of the invention is the provision of improved means for operating the toothed wheel which is usually employed to act frictionally upon the pyrophoric substance for the purpose of spark generation.

Another object of the invention is to improve and simplify the means for, and the method of, operation of the spark producing mechanism.

Still further objects of the invention are to generally simplify and improve the structure of such automatic igniters whereby they may be cheaply produced and satisfactorily operated for a very considerable length of time without requiring any repairs or attention, other than the replenishment of the fluid used as fuel and the renewal of the sparking medium.

The invention consists of the novel structural features and combinations of parts hereinafter claimed, and fully described in the following specification, with reference to the accompanying drawing, wherein—

Figure 1 is a central vertical sectional view of my improved automatic lighter in open position; Fig. 2 is a vertical sectional view taken on the line 2—2 of Fig. 1 and looking toward the left of the latter; Fig. 3 is a cross sectional view of the friction wheel and appurtenant parts, taken on the line 3—3 of Fig. 1; and Fig. 4 is a detail side elevational view of a suitable member, such as a spring, employed for operating the friction wheel.

In constructing my improved igniter, I preferably employ two distinct casings, the

outer casing 10, to which the lid or cover 11 is pivotally held by the stud 12, being adapted to inclose the inner casing 13 which supports the operating parts of the mechanism. By this arrangement I provide a structure which enables the inner casing to be removed bodily from the outer casing for the renewal of sparking plugs and the replenishment of fuel, and the outer casing serves to protect the mechanism of the igniter against damage and also prevents any leakage of liquid fuel into the pockets of the user.

The inner casing 13 is provided with a chamber 14 adapted to receive fuel through an opening 15 at the bottom thereof, normally closed by a leather sheet 16. The chamber 14 is usually filled with an absorbent material such as cotton, to take up the liquid fuel with which the chamber is charged. Formed in the upper wall 13^a of the casing 13 is a plug 17 adapted to retain a tube 18 through which the wick 19 passes, the lower part of the wick terminating in the absorbent material in the chamber 14, and the upper part thereof projecting beyond the end of the tube 18 and being in the path of the sparks produced by the means, and in the manner, hereinafter described.

In igniters of this class the sparking medium usually consists of pyrophorous spark blocks which are held in position to be frictionally engaged by suitable means for the purpose of producing sparks. One of the principal features of my invention relates to the means for presenting these spark blocks to the friction member, and to this end there is arranged in the casing 13 and preferably passing diagonally through the chamber 14 a tube 20 the lower end of which terminates in a pair of oppositely disposed upwardly curving ears or lugs 21, the upper part of the tube extending into close proximity to the friction member hereinafter described. Designed to be arranged within the tube 20 is a coiled spring 22 having a normal tendency to distend, one end of the spring, preferably the lower end, embracing a rod or bar 23 provided with laterally projecting arms 24 which are adapted to engage in the upturned lugs 21 of the tube 20. The opposite end of the spring 22 engages a stud or pin 25 against which rests the spark block 26. It will thus be noted that when the spring 22 is in the tube 20 and the lat-

eral arms 24 rest in the lugs 21, there will be a constant tendency to force the pin 25 against the block 26 and urge the latter into contact with the friction member.

5 The member adapted for frictional engagement with the spark blocks 26 is shown in detail in Fig. 3, and preferably consists of a toothed or milled wheel 27 having one of its lateral faces provided with a plurality of undercut cam grooves 28, the milled surface of the wheel being designed to operate frictionally against the spark block 26. 10 The wheel 27 is revoluble about a stud 29 fixed in a pair of oppositely disposed lugs 30 projecting upwardly from the wall 13^a, of the casing 13. Mounted upon the stud 29 is a yoke 31, the lateral arms 31^a of which are pivoted on the stud 29 and are arranged between the lugs 30 and the lateral faces of the milled wheel 27 (Fig. 3). 20 Formed up from the material of the arm 31 which is adjacent the undercut face of the milled wheel, is a loop 32 which is provided to retain the member designated generally as 33 (Fig. 4) for rotating the milled wheel 27. For convenience of description this member is termed the wheel-rotating-member and is preferably formed as shown in Fig. 4, comprising a substantial body portion 33^a having an orifice 33^b through which the stud 29 extends. The wheel-rotating-member is formed with a shank 33^c which is inserted into the loop 32 and by which means said member is retained in position. 35 Projecting outwardly from the body portion 31^a is a spur or arm 33^d which, when the wheel-rotating-member is in proper position projects into the path of the teeth formed by undercutting the side of the milled wheel 27, and said spur is adapted to quickly rotate the wheel when the cover of the igniter is opened.

At a point in the rear of the arms 31^a the yoke 31 is formed with a reduced slot 34 45 in which are adapted to engage laterally projecting arms 35 formed at one end of a clip 36, the other end of the clip having a hole 37 in which the loop 38 of a retractile coiled spring 39 engages. The other end of the spring 39 is wound about an anchoring stud 40 having lateral arms 41 which abut against the lower edge of a tube like casing 42 formed in rear of, and preferably integrally with, the casing 13. From the foregoing description it will be noted that the spring 39 constantly tends to pull the yoke and appurtenant parts rearwardly.

Attached to one of the walls of the casing 13, as by soldering or in any other suitable manner, is a flat spring 43 which, when the casing 13 is inserted into the casing 10, tends to press tightly against the latter and hold the casings in relative, assembled position. There is also provided upon the 65 yoke 31 a tube 44 which is designed to rest

over and protect the wick when the lid is closed.

The inside of the lid 11 is formed with a notch 45 to receive a catch 46 formed at one end of the spring 47 secured to the casing 10 and under control of the operating button 48 reciprocable in the casing wall 10. 70

Following is a description of the operation of the invention:—Assuming the parts to be assembled as shown in Fig. 1 and the lid 11 to be closed; when it is desired to produce a flame the button 48 is pressed upon thus releasing the restraint upon the spring 39 which has thus far been extended. As soon as the lid 11 is released by pressure upon the button 48 the spring 39 contracts drawing the yoke 31 rearwardly and the spur 33^d of the wheel-rotating-member engages in one of the undercut grooves 28 of the milled wheel 27, whereby the latter is quickly rotated, acting frictionally against the spark block 26 whereby a spark is generated which passes to the wick 19 and causes ignition. When the igniter is to be rendered inoperative the lid 11 is closed 90 down and in this action the spur 33^d will simply glide over the teeth of the undercut grooves in the milled wheel 27 without rotating the latter so that no spark is produced. 95

If new spark blocks are to be inserted, the arms 24 of the stud are simply lifted out of engagement with the lugs 21 and the spring 22 and pin 25 taken out of the tube 20, a new spark block 26 put in position and the parts reinserted in the tube, the arms 24 caused to reengage the lugs 21 and the device is again in condition for action. 100

Should it be desired to have access to any of the other parts of the mechanism the inside casing 13 and the parts carried thereby may be removed from the outside casing 10, and if desired the spring 39 released from its upper and lower anchorages, and in a very simple manner the parts may be renewed, replaced or repaired as desired. 105

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In an automatic igniter, the combination with a casing and a lid therefor, of means for releasably locking the lid to the casing; a friction member within the casing having no connection with the lid and held in inoperative condition when the lid is closed, and means independent of the lid and having a normal tendency to operate said friction member and open said lid when the locking means is released. 115 120

2. In an automatic igniter, the combination with a casing and a lid pivoted thereto, of means for releasably locking the lid to the casing, a friction member revoluble within the casing having no connection with the lid and held in inoperative condition 125 130

when the lid is closed, and means independent of the lid and having a normal tendency to revolve said friction member and open said lid when the locking means is released.

5 3. In an automatic igniter, the combination with an inner casing, of a friction member rotatably supported thereby, means for pressing a sparking body into contact with said friction member, an outer casing adapted to hold said friction member inoperative, 10 and a retractile spring independent of said outer casing and tending normally to operate said friction member.

15 4. In an automatic igniter, the combination with an inner casing having supports for a friction member, of a friction member rotatable in said supports, means for pressing a sparking body into contact with the friction member, an outer casing having a 20 lid which, when closed, retains the friction member against rotation, and a retractile spring independent of said lid and adapted, when the lid is opened, to operate said friction member for the production of sparks.

25 5. In an automatic igniter, the combination with an inner casing having projecting lugs, of a stud supported in said lugs, a friction member rotatable on said stud, an outer casing having a lid which, when 30 closed, retains the friction member against rotation, and a spring independent of said lid and having one end anchored to said casing and adapted to rotate said friction member when the lid is opened.

35 6. In an automatic igniter, the combination with an inner casing carrying a stud, of a friction wheel rotatable about said stud, a yoke rotatable about said stud, a retractile spring directly connected to said yoke for 40 rotating said yoke in one direction, and means carried by said yoke and becoming

operative to rotate the friction wheel when the yoke is rotated by the retractile spring.

7. In an automatic igniter, the combination with a casing carrying a friction member of means for pressing a sparking body 45 into contact with said member, a yoke associated with said friction member, means carried by the yoke for operating the friction member, a retractile spring having 50 one end removably attached to said yoke and its opposite end removably anchored to the casing wall.

8. In an automatic igniter, the combination with a casing carrying a friction member, of means for pressing a sparking body 55 into contact with said member, a yoke associated with said friction member, means carried by the yoke for operating said friction member, said yoke having a reduced slot 60 therein, a retractile spring acting on said friction member, a clip at one end of said spring having a hook engaging in said slot, and lateral arms at the other end of said spring adapted to engage the casing wall. 65

9. In an automatic igniter, the combination with a friction wheel having grooves cut in one face thereof, of a yoke having an arm at each side of the friction wheel, a 70 loop formed up in the arm adjacent the grooved face of the wheel, and an operating member for the friction wheel comprising a shank portion inserted in the loop and a projecting spur adapted to engage the 75 grooves in the friction wheel.

In testimony whereof I have affixed my signature in presence of two witnesses.

DAVID HEYMAN.

Witnesses:

OTTO MUNK,
CLARISSA FRANCK.