

July 15, 1952

M. M. LEVENE
PYROPHORIC LIGHTER

2,603,075

Filed May 13, 1950

2 SHEETS—SHEET 1

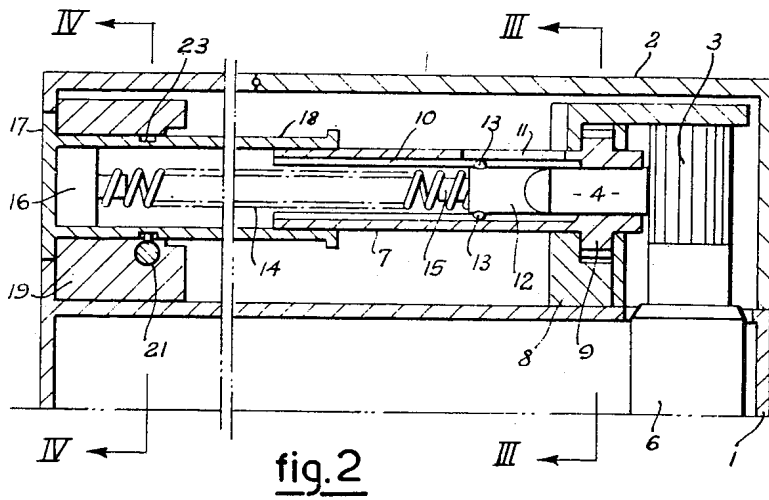


fig. 2

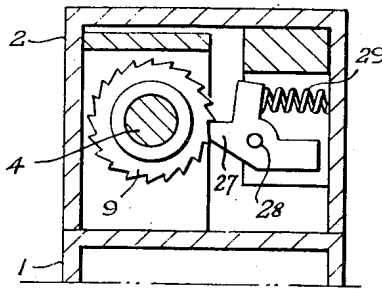


fig. 3

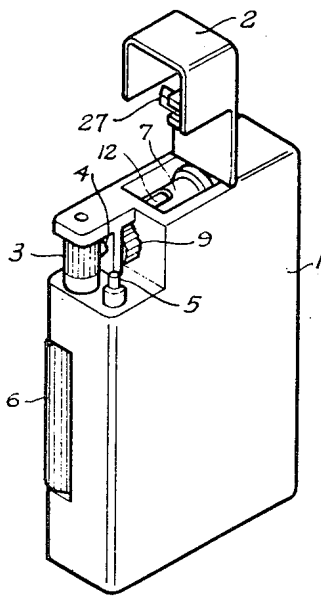


fig. 1

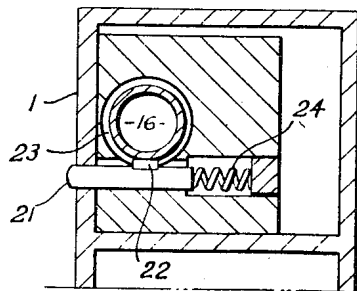


fig. 4

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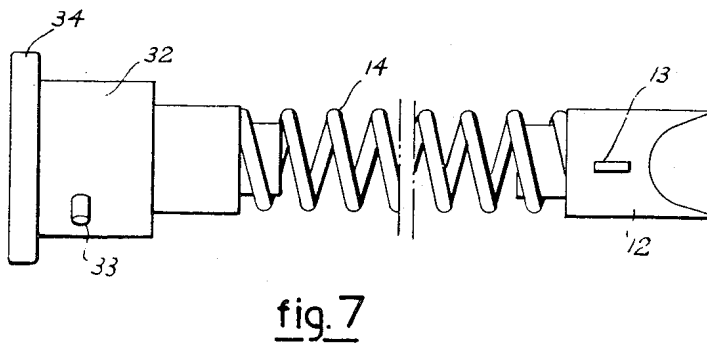
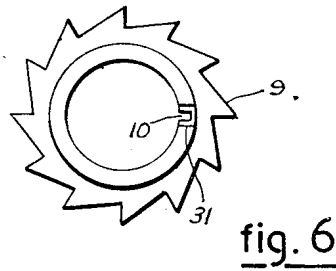
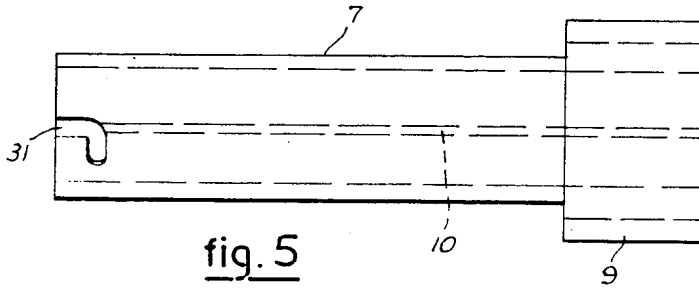
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2 SHEETS—SHEET 2



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UNITED STATES PATENT OFFICE

2,603,075

PYROPHORIC LIGHTER

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9 Claims. (Cl. 67-7.1)

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This invention relates to pyrophoric lighters of the kind in which an abrasive or flint wheel strikes a flint to make a spark.

According to this invention I provide a pyrophoric lighter of the type described comprising a casing, a flint holder mounted for free rotation in the casing and adapted to receive a flint, a spring pressed flint follower adapted to move longitudinally in the flint holder, means for rotating the flint holder and means for causing the flint follower to rotate with the flint holder.

Preferably the means for causing the flint follower to rotate with the flint holder comprises one or more pips or projections on the flint follower adapted to engage one or more longitudinal slots or grooves in the flint holder.

Further according to the invention I provide means for anchoring the rear end of the flint follower and spring assembly.

The invention is illustrated in the accompanying drawings, wherein

Fig. 1 is a perspective showing the general assembly of a lighter made in accordance with this invention;

Fig. 2 is a sectional elevation of the upper part of the lighter;

Fig. 3 is a section taken through line 3-3 of Fig. 2, and

Fig. 4 is a section taken through line 4-4 of Fig. 2;

Fig. 5 is an elevation of the flint tube showing a modification;

Fig. 6 is an end elevation of Fig. 5; and

Fig. 7 is an elevation of the end cap spring and flint follower used in connection with the flint tube shown in Fig. 5.

Referring to Figs. 1 to 4 of the drawings, the lighter comprises a casing 1 having a hinged cap 2 which in the closed position covers the flint wheel 3, flint 4, and wick 5. The flint wheel is rotated by means of a thumb wheel 6. A flint tube 7 is horizontally arranged in a bearing block 8 and is provided towards its forward end with a ratchet wheel 9. The flint tube 7 is provided with two longitudinal grooves 10 and an aperture 11 towards its forward end, for clarity of illustration the grooves 10 and the aperture 11 are shown in the same plane. A flint follower 12 with a sharp broadened forward end is arranged in the flint tube 7 and lateral projections 13 are adapted to engage the grooves 10 so as to ensure that the flint follower 12 rotates with the tube 7. A spring 14 is arranged in the flint tube at the back of the flint follower and secured to a rearwardly projecting knob 15. The rear end of the spring 14 bears against the end plug 16. The end plug 16 has a flanged face 17 which normally lies flush with the rear side of the casing 1. The end plug 16 is provided with a slidable sleeve 18, mounted in a bearing block 19, the forward end of the sleeve engaging over the tube 7. The coil spring 14 tends to push the flint follower 12 into contact with the flint 4 to press it towards the

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flint wheel. The spring also tends to push the end plug 16 out and means are provided for holding the sleeve 18 in its inward position. These means are illustrated in Fig. 4.

A slidable stop 21 has a lateral projection 22 adapted to engage an annular groove 23 in the sliding sleeve 18. A light coil spring 24 tends to push the stop 21 outwards and to retain the projection 22 in the annular groove 23. When it is desired to release the projection 22 from the annular groove 23 the stop is pressed against the spring 24 and the projection 22 disengages the annular groove 23.

The flint tube 7 is adapted to be rotated as the cap 2 is opened. This is done by means of the ratchet wheel 9 which is engaged by a pawl 27 pivoted inside the cap 2. A coil spring 29 returns the pawl to its normal position after the ratchet 9 has been moved.

In use the cap 2 is raised and in raising the cap the ratchet wheel 9 is rotated thereby rotating the flint tube 7 together with the flint follower 12 which presses up against the flint 4 so that the flint 4 is rotated with the flint tube 7. The thumb wheel 6 is then rotated carrying with it the flint wheel 3 which forms a spark with the flint 4. When the lighter has been used the cap is closed. Alternatively the flint tube can be rotated when the cap is closed by reversing the pawl and the cutting teeth of the ratchet wheel so that they will operate in the opposite direction.

In order to renew the flint 4 the stop 21 is manually pressed so that the projection 22 disengages the groove 23. The spring 14 pushes the end plug 16 and its associated sleeve 18 outwards. Thereafter the flange 17 can be grasped by fingers and the associated parts, i. e. the sleeve 18, the spring 14 and the flint follower 12 can be retracted to provide a space between a partially used flint and the flint follower. Then, as may be understood from Fig. 1, the cover 2 can be raised to give access to the aperture 11 and to permit a new flint to be inserted, through said aperture, into the tube 7 in front of the flint follower 12 and behind the remainder of the old worn down flint. The sleeve 18 is then pushed back into the casing until the projection 22 engages the groove 23 and the end face 17 is flush with the casing 1. At this point the flint follower 12 has pushed the flint 4 up against the flint wheel 3. As the end surface of the flint wears down evenly the flint can be used until it is very thin. In this case the projections 13 on the flint follower 12 come up against the end of the grooves 10 and prevent the flint follower 12 from jamming the flint wheel 3.

Referring to Figs. 5, 6 and 7 of the drawings the sliding sleeve 18 is dispensed with and the flint tube 7 extended to the rear of the casing. The flint tube is shown in Fig. 5. It is provided with a longitudinal slot 10 which extends from a point near the forward end of the tube

7 to the rear end. A lateral notch or recess 31 is cut in the slot 10 near the rear end of the tube 7. In this case the rear end of the spring 14 is secured to the end cap or plug 32, which is provided with a lateral locking pin 33, which is adapted to engage the lateral recess 31 in the longitudinal slot 10 in the manner of a bayonet joint. Alternatively more than one pin is provided on the end cap and corresponding slots provided in the flint holder. The locking pin 33 on the plug is offset to an angle of about 30° to 90° with the projection 13 on the flint follower so that when it is positioned in the tube 7 there is a slight torque in the spring 14 sufficient to keep the locking pin 33 in the lateral recess 31. The back 34 of the end cap or plug 32 may or may not be flush with the outer surface of the casing.

In use, in order to put a new flint into the lighter, the plug 32 at the rear end of the spring 14 is turned in an anti-clockwise direction so as to disengage the locking pin 33 from the recess 31 in the slot. The plug 32, spring 14 and flint follower 12 can be completely withdrawn from the tube 7. The old flint can be removed and a new flint inserted. The flint follower 12, spring 14 and plug 32 are re-inserted into the tube 7 so that the projection 13 on the flint follower 12 engages the longitudinal slot 10 in the tube and the plug 32 is pushed until resistance is felt. The plug 32 is then turned slightly in an anti-clockwise direction until the locking pin 33 slides into the longitudinal groove 10 and the torque action of the spring 14 will cause the pin 33 to engage the lateral recess 31 in the slot. The plug or cap 32 can also be operated in the reverse or clockwise direction in which case the lateral recess 31 is provided on the opposite side of the slot 10.

Instead of the bayonet joint arrangement the plug 32 may be screw-threaded and adapted to engage an internal thread on the flint tube.

Instead of having the grooves 10 in the flint tube 7 they can be formed as slots or dispensed with altogether in which case the flint tube can be square or any other polygonal shape in cross section. The flint follower in such case is similarly shaped so as to ensure that the flint follower moves with the flint tube. The flint may be of any shape.

Instead of rotating the flint tube 7 by means of a pawl 27 in the cap 2 it can be rotated when the flint wheel 3 is rotated through a suitable gear from the thumb wheel 6 or the pillar on which the flint wheel is mounted.

What I claim and desire to secure by Letters Patent is:

1. In a pyrophoric lighter, the combination comprising a casing, a tubular flint holder having a circumferential driving portion and being carried by the casing for rotation about the holder's central longitudinal axis, mean coacting non-yieldably with the flint holder for constraining a flint held by the latter to rotate coaxially therewith, means for restraining the flint holder against material movement other than said rotational movement, an abrasive wheel carried by the casing in position for its periphery to sparkingly engage an adjacent end of a flint thus held by the flint holder, and a manually movable flint holder rotating member carried by the casing and having a portion thereon adapted, upon movement of said member, to engage said driving portion of the flint holder to thus rotate the latter and a flint held thereby

to present different lines of contact of the flint, at its said end, with the periphery of the abrasive wheel, in successive operations of the lighter; the said flint holder restraining means comprising a spring-pressed flint follower adapted to move longitudinally in the flint holder, the latter and said follower having inter-engaging portions constraining the two to rotate together.

2. In a pyrophoric lighter, the combination according to claim 1 further characterized in that the flint holder is formed with at least one longitudinally extending recess and the flint follower is formed with a projection extending slidably into said recess and constraining the flint follower to rotate with the flint holder.

3. In a pyrophoric lighter, the combination according to claim 1 further including means associated with the casing and coacting with the flint follower for limiting the latter's movement toward the abrasive wheel whereby to prevent the flint follower from engaging the abrasive wheel when a flint in the device has worn down.

4. In a pyrophoric lighter, the combination according to claim 3 wherein the means for limiting the longitudinal movement of the flint follower comprises a stop at the forward end of the longitudinal recess in the flint holder.

5. In a pyrophoric lighter, the combination according to claim 1 further including a coil spring in the flint holder behind the flint follower and a plug associated with the flint holder and disposed behind the coil spring; the forward end of the coil spring bearing against the rear end of the flint follower and the rear end of the coil spring bearing against said plug; the plug being movable relatively to the flint holder to permit renewal of the flint in said holder.

6. In a pyrophoric lighter, the combination according to claim 5, the said plug having an integral sleeve slidably associated with the flint holder; the said combination further including means for holding the plug in closed position against the action of the coil spring.

7. In a pyrophoric lighter, the combination according to claim 1 wherein the flint holder is formed with a lateral aperture for the introduction of a flint.

8. In a pyrophoric lighter, the combination according to claim 5 further including bayonet joint connection means associated with the flint holder and the plug for releasably holding the two interconnected; further characterized in that the coil spring is fixed at its ends to the said flint follower and the said plug.

9. In a pyrophoric lighter, the combination according to claim 5 in which the end of the plug is flush with the adjacent outer surface of the casing.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,027,900	Ramsdell	May 28, 1912
1,464,203	Hutchinson	Aug. 7, 1923
1,762,281	Stecker	June 10, 1930

FOREIGN PATENTS

Number	Country	Date
917,306	France	Sept. 9, 1946
297,188	Great Britain	Sept. 20, 1928