

# PATENT SPECIFICATION

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COMPLETE SPECIFICATION.



## Improvements in or relating to Pyrophoric Lighters.

I, GEORGES LOUIS MEYER, of 159, Boulevard Pereire, Paris, France, French citizen, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in pyrophoric lighters.

In the majority of lighters as at present in use, the flame, which ignites the wick is produced by the friction between a small knurled disc of steel, known as the abrasive wheel, and a small cylinder of ferro-cerium, known as the flint, this latter being mounted in a metallic tube, one end of which terminates a short distance from the abrasive wheel. At the other end of the tube is introduced a spring which exerts upon the flint the pressure necessary to produce a spark by the rotation of the abrasive wheel. This latter end of the tube is screw threaded to receive a headed screw, against which abuts that end of the spring remote from the flint.

Such an arrangement allows only of a very small adjustment of the spring resting against the flint which in consequence must be of very small length, and therefore, frequently replaced. Further, the regulation of the pressure on the flint is defective since when a new flint is inserted, the spring forces the flint with too great a force and frequently locks the wheel. When, however, the flint is considerably worn, the spring forces the flint to an extent which is not sufficient for the production of the spark.

One object of the present invention is to provide lighters in which the spring is capable of adjustment through a greater range, thus permitting the employment of a cylinder of ferro-cerium of greater length or of several small cylinders, as

used in the customary device, placed end to end.

A further object of the present invention is to provide a lighter in which efficient regulation of the pressure of the spring against the flint is effected by rotation, without axial displacement, of a rod or tube carrying a threaded slider.

The invention is illustrated in the accompanying drawing, in which Figure 1 is a longitudinal part sectional elevation, and Figure 2 is a side elevation of a detached portion. Figure 3 is a longitudinal part sectional elevation of a modification, Figure 4 is a transverse section through A—A of Figure 3, and Figure 5 is a side elevation of a detached portion.

Referring more particularly to Figure 1, 1 is a tube at one end of which is rotatably mounted an abrasive wheel 2, the tube 1 being threaded on its interior for a substantial portion of its length, and receiving a cylindrical screw threaded slider 3, at the centre of which is a hole 4 of rectangular or oval shape. Extending with clearance through the hole 4 is a rod 5 which is of a cross section corresponding to the shape of the hole 4 and which is secured to a knob 6, the rod 5 terminating at its other extremity in a head 7 which prevents it from passing through the slider.

Above the slider 3 is a spring 8 carrying at its upper end a cup-shaped member 9 on which is or are placed the cylinder or cylinders 10 of ferro-cerium. A split ring 11 which is rigidly attached to the button 6 centralizes this latter in the tube 1 and maintains it in this position.

In order to charge the lighter when the flints are exhausted, the button 6 is turned in an anti-clockwise direction until the slider 3 rotated by the rod 5 is completely unscrewed and leaves the tube 1. The button 6 and rod 5 are then removed from

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the tube 1, thus permitting the removal of the spring 8 and the member 9. A new charge of ferro-cerium is then inserted in the member 9, after which the said member, together with the spring 8 is replaced and the slider 3 is screwed into the tube 1 by turning the button 6 until the desired pressure is obtained between the cylinders of ferro-cerium and the abrasive wheel 2.

If the pressure of the spring 8 on the cylinders of ferro-cerium 10 be insufficient or too strong to obtain the production of a spark, it is increased or lessened by turning the button 6 clockwise or anticlockwise, which has the effect of either compressing the spring 8, or of allowing it to extend.

It will be seen that a lighter according to this invention permits of the employment at one time of a large number of cylinders of ferro-cerium of the customary dimensions, or of a single long cylinder, together with perfect regulation of the pressure of the cylinders 10 against the abrasive wheel 2 until the complete exhaustion of the charge of ferro-cerium.

In the modification shown in Figures 3-5, the rod 5 is replaced by an inner tube 12 rotatable in the tube 1. This tube 12 is secured at its lower end to the button 6, and its wall is slotted at 13 from the button to a height necessary for the movement of the slider 3 and extending through the slots 13 are vanes 3<sup>a</sup> 3<sup>b</sup> 3<sup>c</sup>, carried by the slider 3, the outer peripheral portion of the vanes being screw threaded to engage the screw thread on the tube 1.

Rotation of the button 6 produces the same effect as with the rod 5 of Figures 1 and 2.

In order to recharge the lighter the tube 12 is taken out of the tube 1 and the member 9 is re-filled with ferro-cerium.

This modification permits the use of flints of a much greater length than with the arrangement shown in Figures 1 and 2. For example, the length of the spring 8 could be reduced to a dimension  $h$  indicated in Figure 3, adjustments then being more frequent because of the short length of the spring 8.

Having now particularly described and ascertained the nature of my said invention and in what manner the same

is to be performed, I declare that it is to be understood that the claims of my invention are to be construed as excluding the pyrophoric lighter claimed in the Specification of Patent No. 268,620, and that what I claim is:—

1. A pyrophoric lighter of the type in which a flint is urged by a spring into contact with an abrasive wheel, comprising a screw threaded member, against which the one end of the spring abuts and which is in engagement with a corresponding screw thread formed in the flint tube, and a rotatable member which is operable from outside the tube and on which the screw threaded member is slidably but not rotatably mounted.

2. A lighter as claimed in Claim 1, in which the rotatable member comprises a rod of rectangular cross section which passes freely through a hole of corresponding shape formed in the threaded member.

3. A lighter as claimed in Claim 2, in which the rod is provided with a head adapted to prevent the removal of the threaded member from the rod when this latter is removed by unscrewing, from the flint carrying tube.

4. A lighter as claimed in Claim 2 or 3, in which the rotatable member is provided with a split ring adapted to engage the interior of the tube.

5. A lighter as claimed in Claim 1, in which the rotatable member comprises a tubular member, formed with longitudinal slots, through which extend portions of the screw threaded member.

6. A lighter as claimed in Claim 5, in which the tubular member extends to the upper part of the tube and is adapted to receive the flint.

7. A lighter as claimed in any of the preceding claims in which the spring carries a cup-shaped member adapted to receive the flint.

8. A pyrophoric lighter substantially as described with reference to the accompanying drawings.

Dated this 1st day of September, 1927.  
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[This Drawing is a reproduction of the Original on a reduced scale.]

