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PATENT SPECIFICATION



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COMPLETE SPECIFICATION

Improvements relating to Pyrophoric Lighters

We, LA NATIONALE, SOCIÉTÉ ANONYME, a Company organised under the laws of Switzerland, of Geneva, Switzerland, 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:—

In pyrophoric lighters known up to the present time, the pyrophoric flint is generally pressed against the friction wheel by a spring. The said spring expands in proportion to the wear of the flint and when it is desired to obtain a sufficient pressure until the flint has been used up completely, it is necessary either to provide means for adjusting this pressure or to use a very long spring of which the pressure is only slightly modified as a result of the shortening of the flint. But in order to mount a long spring in a lighter, it is frequently necessary to cause it to pass through the tank of the lighter whereby the capacity of the latter is reduced. When on the contrary it is desired to place the spring horizontally above the tank the lighter must be made of a width which is at least equal to the length of the compressed spring.

The present invention enables these disadvantages to be eliminated and in particular to mount the device which ensures the pressing up of the flint entirely outside the tank, whilst the lighter is still of slender shape.

In the device forming the subject of the present invention, the spring is simply divided into a number of separate springs which are connected together mechanically, the two extreme springs each contact with one end, one against the pyrophoric flint and the other against a bearing point, in such a manner that as a whole they present the same elasticity as a single spring of the same total length as all the separate springs, this elasticity being capable, without adjustment, of the effective operation of the lighter until the flint has been worn completely.

A form of construction of the subject of the present invention is shown in

sectional elevation in the accompanying drawing. 55

The fuel container 1 carries on its upper face a friction wheel 2 mounted on a shaft 3 driven by a knob 4 projecting to the outside of the container. The support 5 for the shaft 3 is provided with an extension 6 in which is formed a tubular seating 7 and on the end of the shaft 3 is pivotally mounted a member 8 provided with a tubular seating adapted to receive a pyrophoric flint 9, as described in specification No. 477,768. This member may be brought opposite another member 10 also provided with a tubular seating in which slides a hollow piston 11 provided with a projection 12 which passes through a longitudinal slot in the member 10 and enables the piston to be actuated manually when fitting the flint 9 in position. As will be seen from the drawing the piston 11 enters the seating containing the flint 9 and thus holds the member 8 in position. 60 65 70 75

The members 6 and 10 do not extend up to the edge of the upper face of the container 1 opposite that carrying the friction wheel 2, but leave at this point an open space 13 in which is mounted a double armed lever 14 pivotally mounted at its mid-portion at 15 to the fuel container and of which the ends are located opposite the seating 7 and the piston 11. The double armed lever is provided at its lower end 16 with an opening in which is mounted the end of a guide rod 17 for a spring 18. This rod is retained in position by a pin 19 against which there bears one end of the spring 18 of which the other end is located in the tubular seating 7. The other end 20 of the lever 14 is provided with a small fixed projection which enters one end of a spring 21 located in the piston 11. 80 85 90 95

22 indicates the cover of the lighter and is hinged at 23.

The operation of this device will be readily understood. The two springs 18 and 21, arranged parallel to one another and connected mechanically at one of their ends by means of the lever 14, act on the flint 9 in the same manner as a spring formed in one piece of greater 100 105

length, having an expansion and a force sufficient to ensure the satisfactory operation of the lighter. As will be seen from this form of construction the thrust of the spring 18 on its bearing point takes place in the same direction as that of the spring 21 on the flint 9.

The piston 11 passes into the member 8 in proportion to the wear of the flint 9 against the friction wheel 2. For inserting a new flint the piston 11 is withdrawn rearwardly against the action of the springs 18, 21 by means of the knob 12 until the member 8 has been disengaged and can pivot laterally as described in specification No. 477,768.

It will be obvious that the invention may be carried out in a manner different to that shown in the drawing.

The guide rod 17 may in some cases be omitted or a similar guide may be provided on the end 20 of the lever 14. The spring may be divided into more than two separate springs in such a manner as to make it of much greater length and the various springs need not necessarily be located parallel to one another.

This arrangement has the considerable advantage of enabling a number of springs to be mounted in lighters of small dimensions at a point where the construction of the lighter leaves the necessary space.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A device for pressing a pyrophoric flint against a friction wheel in a lighter which is not provided with means for readjusting the pressure exerted by the flint on the friction wheel during the course of wear of the flint, characterised in that there is provided an assembly of elements, including at least two springs, these elements forming a resilient system located between a fixed bearing point and the flint, the springs of this system being so arranged that the moment at which the flint is of its maximum length, sufficient energy is stored in the system so as to ensure that the resilient system exerts sufficient pressure on the flint, when this has been worn almost com-

pletely, to produce a spark when the friction wheel is rotated.

2. A device according to claim 1, characterised in that the pressure on the flint is obtained by at least two springs each of which is formed by a coiled spring arranged, in a free space of the lighter, in series between the pyrophoric flint and the fixed bearing point, each free end of one spring being connected mechanically to one free end of another spring in such a manner that as a whole the springs present the same elasticity as a single spring of the same total length as all the springs, this elasticity being sufficient to ensure the satisfactory operation of the lighter until the flint has been worn completely.

3. A device according to claim 1 or 2, characterised in that the ends of the springs located between the spring bearing against the fixed bearing point and that bearing against the pyrophoric flint are connected together by a lever.

4. A device according to any one of claims 1—3, in which only two springs are provided, characterised in that the springs are compression springs and are so located that the pressure of one spring against the fixed bearing point is effected in the same direction as that of the other spring on the flint.

5. A device according to any one of the preceding claims, characterised in that the fixed bearing point is provided on the support of the shaft for the friction wheel.

6. A device according to claim 1 or 2, characterised in that the springs are parallel to one another.

7. A device according to claim 1 or 2, characterised in that a lever is provided at least at one of its ends with a guide rod passing into the corresponding spring.

8. A device for pressing a pyrophoric flint against the friction wheel of a lighter, substantially as hereinbefore described with reference to the accompanying drawing.

Dated this 12th day of June, 1939.

For the Applicants,

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[This Drawing is a reproduction of the Original on a reduced scale.]

