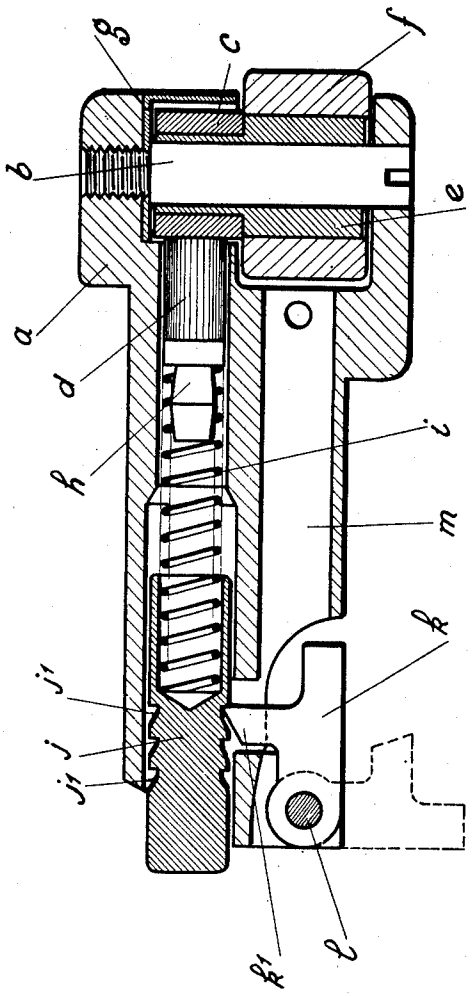
March 4, 1952 M. QUERCIA 2,587,894

YOKE FOR PYROPHORIC LIGHTERS

Original Filed Sept. 22, 1948



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Patented Mar. 4, 1952

2,587,894

UNITED STATES PATENT OFFICE

2,587,894

YOKE FOR PYROPHORIC LIGHTERS

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Continuation of application Serial No. 50,524, September 22, 1948. This application December 4, 1950, Serial No. 198,981

4 Claims. (Cl. 67—7.1)

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The present invention relates to a yoke for pyrophoric lighters, and more particularly to a yoke having a cylindrical housing accommodating the flint and a helical spring acting on the flint.

This application is a continuation of my abandoned co-pending application Serial No. 50,524, filed September 22, 1948, for "Flint Carrying Yoke for Cigar Lighters."

It is an object of the present invention to keep the pressure on the flint substantially constant in spite of the wear of the flint.

It is another object of the present invention to provide a yoke in which the tension of the spring can be easily adjusted.

It is a further object of the invention to provide a yoke in which the exchange of the flint is rendered particularly simple.

A yoke according to the present invention comprises in combination, a plunger acting on the spring opposite to the flint and arranged in the housing for longitudinal displacement, the plunger protruding beyond the end of the housing and having a plurality of circumferential grooves each having a first wall arranged substantially at right angles to the axis of the plunger and a second wall inclined at an angle substantially different from 90° with respect to the axis of the plunger, the second wall being arranged so as to face the spring engaging end of the plunger, a member freely articulated to the body of the yoke, and a finger forming part of the member having a shape corresponding substantially to the cross-section of the grooves and including an inclined face adapted to engage the second walls, the finger being adapted to engage the grooves one at a time automatically under the action of the weight of the member, whereby the plunger holds the spring under tension and the engagement of the inclined face of the finger with one of the second walls of the grooves allows to increase the tension of the spring by exerting a pressure on said plunger, thereby passing automatically said finger from engagement with one of the grooves to engagement with the next groove.

In a preferred embodiment of the present invention a boring is provided in the housing for accommodating spare flints and arranged in alignment with the point of articulation of the member, the member closing in one end position thereof, and in the other end position thereof freeing, the opening of the boring.

The novel features which I consider as characteristic for my invention are set forth in particular in the appended claims. The invention

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itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

The only figure shows a sectional elevation of a yoke according to the present invention.

As will be seen from the drawing, the device comprises a body *a*, constituting the yoke of the lighter proper, to which is attached an axle *b* carrying a striated wheel *c* for acting on a ferrocerium flint *d*. Between the wheel *c* and the axle *b* is arranged a hollow driving shaft *e*, which freely rotates on said axle, and whereon are keyed the wheel *c* and an operating knurled wheel *f* which is acted upon for operating the striated wheel *c*. A protecting case *g* is provided around the wheel *c* to form a wheel housing.

On the flint *d* presses, preferably through an intermediate piece *h* a pressure spring *i*, housed in a longitudinal boring of the body *a*. At its other end, this spring bears on a cylindrical plunger *j* arranged for sliding freely in said boring; this plunger *j* is provided with a series of circular grooves having substantially vertical walls and inclined walls j^1 and engaged by a nose k^1 of a finger *k*, articulated at *l* on the body *a*. This finger *k*—k^1 when engaged in one of the grooves of the plunger *j* (position shown on the figure), maintains the pressure of spring *i* on the flint *d*. It will be realized that as the flint wears off, it will be sufficient, in order to keep the tension of the spring substantially constant, to cause the plunger *j* to advance inside its boring by making it engage successively the nose of the finger *k* with one of the grooves corresponding to the position of the plunger. The plunger *j* is provided with an adequate and sufficient number of grooves to maintain a substantially constant pressure of the spring *i* on the flint *d*, in accordance with the wear of the latter. In the embodiment shown in the drawing, three grooves j^1 only are shown, but it is obvious that, according to the length of the flint used, the plunger might have four, five, or a larger number of grooves.

The lower part of the yoke comprises a second longitudinal boring *m*, parallel with the first one, which can be used for storing the spare flints. In the normal position, the end of the articulated finger *k* closes this housing and prevents the flints from escaping therefrom.

The operation of this device is as follows:

In use, when, due to the wear of the flint, it is desired to restore the pressure of the spring, it is

sufficient to turn the device upside down so as to bring on top the finger k and then to press with the hand on the protruding end of the plunger j, so as to bring the next groove j^1 facing the nose k^1 of finger k. The latter rises for the passage from one groove to the next and, under the action of gravity, it falls into the next groove which it engages. By discontinuing the action of the hand on the plunger j, the spring i which acts on the latter maintains the engagement between the finger and the groove and thus ensures the locking. Thus, by successively engaging, one after the other, the grooves of the plunger, the tension of the spring is kept substantially constant during the wearing off of the flint.

On the other hand, in order to replace the flint, the finger k—k^1, is brought downwards, (position shown in the drawing), then, by pressing on the plunger, the finger is released, and, toppling over under the action of its weight, (position shown in dotted lines) it frees the plunger j which can thus be removed together with the spring i to put a new flint in position. In this position the housing m for the spare flints is itself freed, which makes it possible to remove the necessary flint.

It will be realized that the device may be built of metal, from the block, suitably milled and drilled, which will give an extremely strong assembly, of a high precision. The system thus does not involve the use of any screw thread liable to wear, and does not require the use of any screw driver or any accessory.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of yokes for pyrophoric lighters differing from the types described above.

While I have illustrated and described the invention as embodied in a yoke having a cylindrical housing accommodating the flint, I do not intend to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of my invention.

Without further analysis, the foregoing will so fully reveal the gist of my invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

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

1. A self-contained yoke unit for pyrophoric lighters comprising in combination a narrow elongated cylindrical housing; a friction wheel mounted within said cylindrical housing at one end thereof turnably about an axis extending normal to the axis of said cylindrical housing; an operating wheel secured to said friction wheel so as to enable manual turning of the same about its axis of turning; a flint arranged in said cylindrical housing slidably within the same; spring means arranged also in said cylindrical housing pressing said flint against said friction wheel; a pressure member arranged at the other end of said cylindrical housing slidably within the same so as to abut against said spring means and force the same against said flint, said pressure member having a plurality of circumferential grooves each having a first wall arranged substantially at right angles to said pressure member and a second wall inclined at an angle substantially different from 90° with respect to the axis of said pressure member; and an adjusting member movably mounted on said cylindrical housing and having a shape corresponding substantially to the cross-section of said grooves and including an inclined face adapted to engage and hold said pressure member in different positions within said cylindrical housing, thereby adjusting the pressure exerted by said spring means against said flint.

2. In a yoke for pyrophoric lighters having a cylindrical housing accommodating the flint and a helical spring acting on the flint, in combination, a plunger acting on the spring opposite to the flint and arranged in the housing for longitudinal displacement, said plunger protruding beyond the end of the housing and having a circumferential groove; a member freely articulated to the body of the yoke; a finger forming part of said member and arranged to engage said groove automatically under the action of the weight of said member to hold said plunger in position; and a boring in said housing for accommodating spare flints and arranged in alignment with the point of articulation of said member, said member closing in one end position thereof and in the other end position thereof freeing the opening of said boring.

3. A removable spark creating yoke unit for pyrophoric lighters comprising in combination, a cylindrical housing being open at both ends; a flint arranged in said cylindrical housing slidably within the same; a friction wheel permanently mounted on said housing in front of one open end of the same preventing removal of said flint through said open end and turnable about an axis extending normal to the axis of said cylindrical housing; an operating wheel secured to said friction wheel so as to be also permanently mounted on said cylindrical housing together with said friction wheel, enabling manual turning of said friction wheel; a helical spring arranged in said cylindrical housing permanently pressing with one end said flint against said friction wheel; a plunger arranged also slidably in said housing and abutting against the other end of said helical spring, said plunger protruding beyond the other open end of said cylindrical housing and having a plurality of circumferential grooves, each of said grooves having a first wall arranged substantially at right angles to the axis of said plunger and a second wall inclined at an angle substantially different from 90° with respect to the axis of said plunger; a member freely articulated to the body of the yoke; and a finger forming part of said member having a shape corresponding substantially to the cross-section of said grooves and including an inclined face adapted to engage said second wall of any one of said grooves, said finger being adapted to engage said grooves one at a time automatically under the action of the weight of said member, whereby said plunger holds the spring under tension and the engagement of said inclined face of said finger with said second wall of said any one of said grooves allows to increase the tension of the spring by exerting a pressure on said plunger, thereby passing automatically said finger from engagement with one of said grooves to engagement with the next groove.

4. In a yoke for pyrophoric lighters having a

cylindrical housing accommodating the flint and a helical spring acting on the flint, in combination, a plunger acting on the spring opposite to the flint and arranged in the housing for longitudinal displacement, said plunger protruding beyond the end of the housing and having a plurality of circumferential grooves, each of said grooves having a first wall arranged substantially at right angles to the axis of said plunger and a second wall inclined at an angle substantially different from 90° with respect to the axis of said plunger, said second wall being arranged so as to face the spring engaging end of said plunger; a member freely articulated to the body of the yoke; a finger forming part of said member having an end having a shape corresponding substantially to the cross-section of said grooves and including an inclined face adapted to engage said second wall of any one of said grooves, said finger being adapted to engage said grooves one at a time automatically under the action of the weight of said member, whereby said plunger holds the spring under tension and the engagement of said inclined face of said finger with said second wall of said any one of said grooves allows to increase the tension of the spring by exerting a pressure on said plunger, thereby passing

automatically said finger from engagement with one of said grooves to engagement with the next groove; and a boring in said housing for accommodating spare flints and arranged in alignment with the point of articulation of said member, said member closing on one end position thereof, and in the other end position thereof freeing, the opening of said boring.

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