R. VON HORVATH.

APPARATUS FOR PRODUCING SPARKS.

APPLICATION FILED NOV. 25, 1911.

1,018,763.

Patented Feb. 27, 1912.

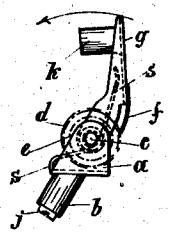

Fig.1.

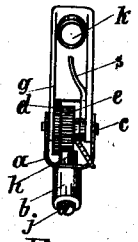

Fig.2.

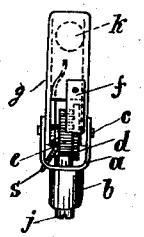

Fig.3.

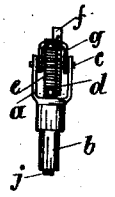

Fig.4.

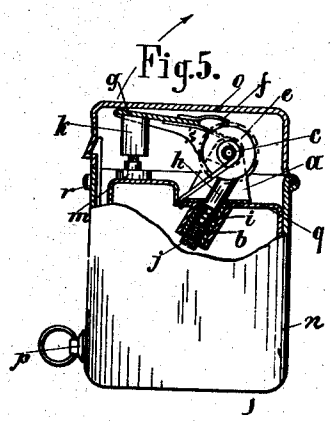

Fig.5.

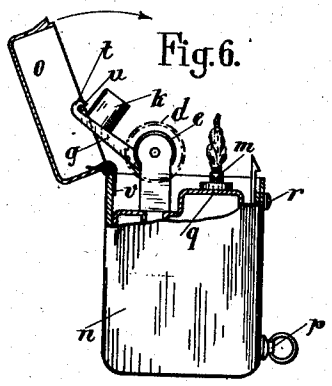

Fig.6.

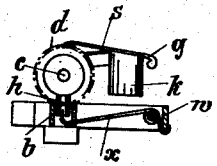

Fig.7.

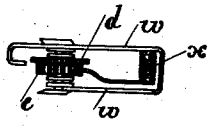

Fig.8.

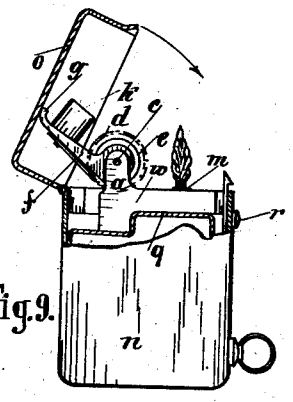

Fig.9.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR PRODUCING SPARKS.

1,018,763. Specification of Letters Patent. Patented Feb. 27, 1912.

Application filed November 25, 1911. Serial No. 662,350.

To all whom it may concern:

Be it known that I, RICHARD von HORVÁTH, a subject of the Emperor of Austria-Hungary, residing at No. 17 Gürtel, Vienna, Empire of Austria-Hungary, have invented new and useful Improvements in Apparatus for Producing Sparks, of which the following is a specification.

My invention relates to an improved apparatus for producing sparks by the mechanical friction of a wheel or disk having a roughened or milled circumference, against a piece of pyrophorous metal or compound, such, for instance, as an alloy of iron and cerium, the sparks produced by said frictional contact serving to ignite a wick or a match or a combustible gas into which the said sparks are thrown. The said sparking apparatus is so constructed to contain in itself or combine with each other all those parts which are necessary for producing sparks, viz. the means for rotating the friction-wheel, the piece of pyrophorous metal and the means for resiliently pressing the piece of pyrophorous metal against the friction-wheel, and the said apparatus, further, is adapted to be readily secured to any box or casing containing the wick or match and the fluid combustible or to any other device adapted for lighting lamps or lanterns, independently from the special device to which the said sparking apparatus is or may be applied. Owing to such independent construction the said sparking apparatus may be manufactured and sold as a special merchandise, and it may be secured to or applied to any contrivances, such as pocket lamps, lamp or lantern burners, gas-igniters and the like without requiring special means or tools for fitting the apparatus in position ready for use.

The sparking apparatus, according to this invention, is constructed similar to the fashion of a ratchet-brace, and to make my invention properly understood, I have illustrated the same in the accompanying drawings, in which:

Figure 1 is a side-elevation of the apparatus for producing sparks; Fig. 2 is a front-view of the same and Fig. 3 is a rear-elevation of the same. Fig. 4 is a rear-elevation of the apparatus showing another modification of the construction, the pawl-carrying arm, in this figure, being shown in its lowered position. Fig. 5 represents a pocket-lamp, partly in section, with the sparking-apparatus constructed according to Figs. 1 to 3, in position. Fig. 6 illustrates a pocket-lamp opened and with a sparking apparatus in position constructed according to the modification shown in Fig. 4. Figs. 7, 8, and 9 are, respectively, a sectional elevation and a plan of the sparking apparatus, and a match-box shown open with the sparking apparatus fitted thereto according to another modification.

Referring to Figs. 1, 2, and 3, *a* is a supporting brace holding the pivot-pin *c*, to which the ratchet-wheel *d* is loosely mounted with the friction-wheel rigidly secured or formed to it. To the same pivot-pin *c* is also loosely mounted an arm *g*, the base of which is formed in the shape of a yoke within which the said wheels *d* and *e*, are engaged. To the said arm *g*, a pawl *f*, is secured, adapted to engage within the toothed circumference of the ratchet-wheel *d*. The said pivot-pin *c*, carries, within the yoke of said arm *g*, a coiled wire-spring *s*, one end of which rests against the supporting brace *a*, while the other or upper end of said spring has a bearing contact against the lower surface of the arm *g*, thereby tending to turn said arm into the open position as shown in Figs. 1, 2, and 3.

The supporting brace *a*, has in its back or bent portion an aperture into which is secured a short tube *b*, serving to hold, in its upper portion, the piece of pyrophorous metal *h*, and below the same a coiled wire-spring *i*, the lower end of said tube being closed by a screw-plug *j*, which may be adjusted to increase or release the pressure of said spring *i* against the piece *h* of pyrophorous metal, thereby pressing the same against the friction-wheel *e*. In Fig. 5 the spring *i* and plug *j* are shown out of the tube *b*, for making the same visible. The said tube *b*, which may be square or angular and the position of which, with relation to the brace *a*, may be inclined, as shown in Figs. 1, 2, 3, and 5, or vertical, as shown in Figs. 4 and 6, affords the means to fit the apparatus to the device to which the said sparking apparatus is desired to be applied. Fig. 5 shows, how the sparking apparatus, as a whole and independent device, may be fitted into a pocket-lamp by simply introducing the tubular extension *b*, into a corresponding socket of the oil-fountain or any

other part of the pocket-lamp. In fitting the sparking apparatus to any other lighting or igniting device, a similar socket to hold the tubular extension may be provided for.

From Fig. 5 it will be clearly seen, that on closing the cover of the box *n*. the arm *g*, of the sparking apparatus will be forced down from the position shown in Figs. 1, 2 and 3, and that, by forcing down said arm *g*, the spring *s*, the upper end of which bears against said arm *g*, will be stretched. The pawl *f* secured to said arm *g* will freely slide over the toothed periphery of the ratchet-wheel *d*, owing to the inclined position of each ratchet-tooth. As soon as the cover *o* of the box *n* has been set free in the usual manner by a pressure applied to the stud *r*, acting against the locking spring and releasing the same from its engaging notch, the said cover *o*, will be thrown open by the tension of the spring *s* and by the arm *g* pressing against the inside surface of said cover owing to the tension of said spring *s*. While the cover *o*, is being thrown open, the said arm *g*, will simultaneously be thrown into its vertical position and the pawl *f*, engaging into the ratchet-wheel *d*, will turn said wheel and the friction-wheel *e*, secured to said wheel *d*. Accordingly, the friction-wheel *e* will be carried along the pyrophorous piece *h* held within the tube *b*, and sparks will be produced in the well-known manner to ignite the wick projecting from the wick-tube *m*.

The modification illustrated by Figs. 4 and 6 consists in that the spring *s* around the pivot-pin *c*, of the supporting brace *a*, has been omitted. As will be seen in Fig. 6, the force for throwing the arm *g* into the open position, in this case, is derived from the spring *v*, which serves to throw open the cover *o*, as soon as the stud *r*, has been pushed against the locking spring. The cover *o*, in this case, has a pin *u*, projecting inward from one of the sides of the cover, and said pin *u*, is engaged by an eye or a hook-shaped end *t*, at the free end of the arm *g*, of the apparatus. The cover *o*, carries the said arm *g*, along with it on being thrown open as well as on being closed by hand.

In the other modification illustrated by Figs. 7, 8, and 9, the tubular extension *b* of the supporting brace *a*, instead of being elongated in a downward direction, has been enlarged in the lateral direction to form a frame *w*, which serves to fit the sparking apparatus into the box *n*, as shown in Fig. 9. A pin projecting inside the said frame *w*, carries a coiled wire spring *x*, which extends with its free end into the tube *b*, as fully shown in Fig. 7, to act a constant upward pressure against the lower end of the pyrophorous piece *h*, to hold the same in a permanent frictional contact against the wheel *e*.

The tubular cap *k*, secured to the arm *g*, serves to extinguish the flame on closing the cover *o*, and the screw-plug *p* stoppers the opening of the font *q*, through which the fluid fuel is fed into the said font.

I claim as my invention:

In apparatus for producing lighting sparks by mechanical friction, the combination, with a supporting brace, of a pivot-pin carried by said brace, a ratchet-wheel loosely mounted to said pivot-pin, a friction-wheel connected to said ratchet-wheel, an arm loosely mounted to said pivot-pin, a pawl carried by said arm to engage the said ratchet-wheel, a spring carried by the same pivot pin to operate the said arm, means for holding a pyrophorous matter under pressure against the said friction-wheel, and means for fitting the sparking apparatus to an igniting device, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RICHARD VON HORVÁTH.

Witnesses:
AUGUST BUGGER,
ADA MARIA BERGER.