C. HINKEL.

IGNITER.

APPLICATION FILED NOV. 14, 1911.

Patented July 8, 1913.

1,066,902.

2 SHEETS—SHEET 1.

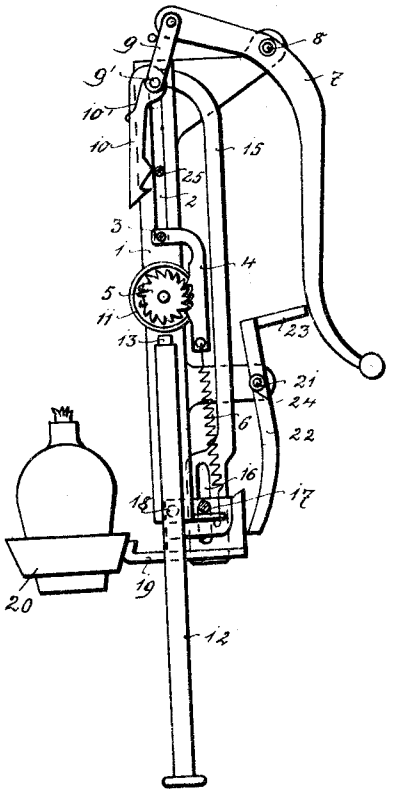


Fig. 1.

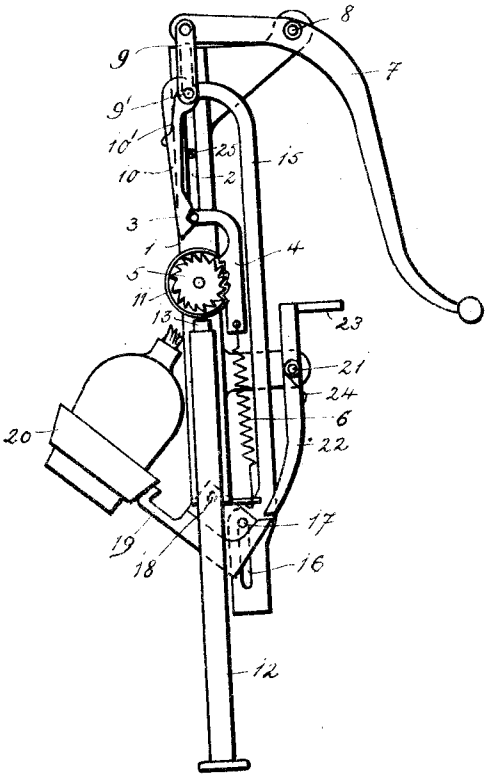


Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 3.

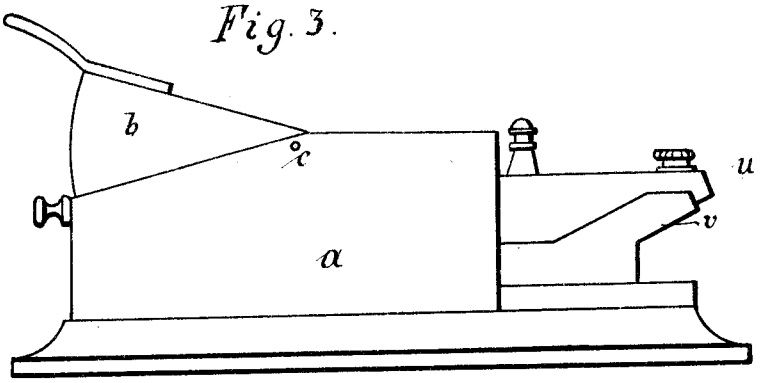


Fig. 4

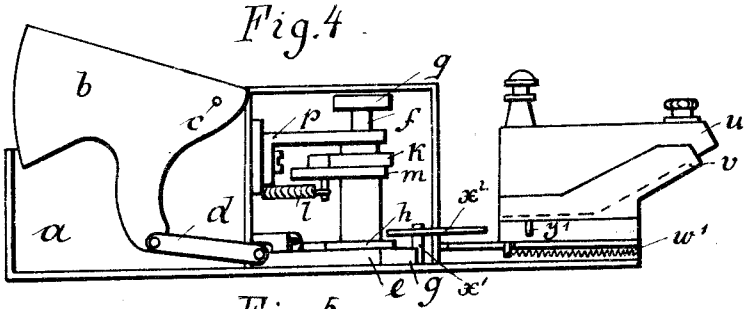


Fig. 5.

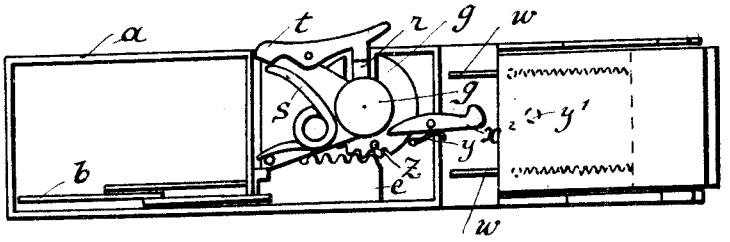
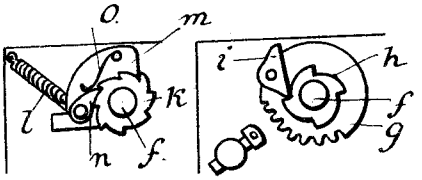


Fig. 6. Fig. 7.



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UNITED STATES PATENT OFFICE.

CHRISTIAN HINKEL, OF BERLIN, GERMANY.

IGNITER.

1,066,902. Specification of Letters Patent. Patented July 8, 1913.

Application filed November 14, 1911. Serial No. 660,189.

To all whom it may concern:

Be it known that I, CHRISTIAN HINKEL, a subject of the German Emperor, residing at the city of Berlin, in the Kingdom of Prussia, German Empire, have invented a new and useful Igniter, of which the following is a specification.

My invention relates to igniters acting through a spark produced by friction. In these known igniters sparks are produced by the friction of pyrophorous metal, a so-called sparker, on a toothed wheel or a rough surface and ignite a wick saturated with a combustible. This wick has to be arranged as near as possible to the sparks which cause the sparker and the mechanism for producing the sparks to become smoked.

A primary object of my invention is to avoid this defect. To this end, the receptacle for the combustible and wick in my improved igniter is movably mounted, and while the sparks are flying it is caused to approach the place at which the sparker is rubbed and can be removed therefrom after the wick is ignited.

My invention substantially consists in the combination of the device for actuating the mechanism for producing the sparks with a device for moving the said receptacle toward and away from the place where the sparks are produced.

One illustrative embodiment of the invention and a modification thereof are represented by way of example in the accompanying drawing, wherein:—

Figures 1 and 2 are side elevations showing one form of my igniter in two different positions, the casing having been removed, Fig. 1 showing the position at the beginning of the movement, and Fig. 2 the position in which the receptacle has approached the sparker; Figs. 3 to 7 show a modified form, Fig. 3 being a side elevation, Fig. 4 a like view after the outer wall has been removed, Fig. 5 a top plan view and Figs. 6 and 7 detail views.

Referring firstly to Figs. 1 and 2, the numeral 1 designates the fixed frame, 2 a vertical groove therein, in which a guide block 3 is movable up and down. This block is connected with a toothed slide 4 coacting with the ratchet wheel 5 journaled in the frame 1; when the slide moves downward it rotates the ratchet wheel 5, whereas when it moves upward its teeth slide over the teeth of the ratchet wheel. A coil spring 6 tensioned between the slide 4 and the frame 1 tends to pull the slide 4 downward. The block 3, to which the slide 4 is attached, can be pulled upward in the groove 2 by the two-armed lever 7 formed as a pump handle; this lever 7 is fulcrumed at 8 in the frame 1 and its upper shorter arm carries short links 9, 9 guided by a pin 9′ in the groove 2; a catch 10 can swing on the pin 9′ between the links. When the lower longer arm of the lever 7 is elevated this catch moves downward and the lower end of the latter strikes against the block 3, and in consequence of its shape and coaction with the block, said catch 2 swings outwardly, this movement being opposed by a small spring 10′; and when the end of the catch has passed the block 3, said small spring 10′ causes the end to snap behind the block. Firmly connected with the ratchet wheel 5 is the friction wheel 11 against which the sparker 13 carried by the column 12 bears; 15 is a tie-rod which is pivotally connected with the links 9 and has in its lower end a slot 16 containing the stop 17 fast on the two-armed lever 19 which rocks about the pivot 18. One arm of this lever is formed with a carrier 20 for the said receptacle, while the other arm has at its end a beveled face against which the beveled face of the lower arm of the two-armed lever 22 can bear. The said arm of this lever 22, fulcrumed on the pivot 21, is pushed by the spring 24 toward the beveled end of the lever 19, and the other arm has a stop 23.

This form of my igniter operates as follows: When the lower arm of the lever 7 is tilted upward the catch 10 moves downward and engages under the block 3. When the lower arm of the lever 7 is subsequently depressed the catch 10, pulled upward by means of the links 9, draws the block 3 and with it the slide 4 upward against the action of the spring 6, when the slide slides over the teeth of the ratchet wheel 5. But when a cam on the catch 10 passes a pin 25 mounted in the path of the block, the action of the small spring 10′ is overcome, the catch 10 moves outward and the block 3 is released. The latter together with the slide 4 now follow the tensile force of the spring 6, and as the teeth of the slide 4 engage in those of the ratchet wheel 5 when the slide descends, the ratchet wheel is rapidly rotated, its rotation is imparted to the friction wheel 11 and the scraper 13 car-

ried by the spindle 12 is rubbed by the friction wheel 11. When the catch 10 moves downward the rod 15 also descends and the upper end of its slot 16 drives the stop 17 downward, whereby the lever 19 is rocked and the said receptacle is driven upward; the beveled end of the lever 19 simultaneously moves under the beveled face of the lever 22, so that the said receptacle or lamp is kept in its elevated position. This position is changed only when the lever 7 moves farther downward and abuts against the stop 23 of the lever 22. The lever 19 is then liberated and falls in consequence of its own weight into its original position. The receptacle is hereby removed farther away from the mechanism for producing sparks.

Referring now to the modified form shown in Figs. 3 to 7 the improvement is applied to a well-known cigar-cutter such as is in general use on tables. The cigar-cutter comprises a box *a*, for the cut ends of the cigars, in which a knife or blade *b* is mounted to rock up and down in a slot in the lid of the box. Pivotally connected to this knife *b*, fulcrumed on the pivot *c*, is a link *d*, connected to which is a rectilinearly guided rack *e*, so that when the knife *b* is depressed the rack *e* is pushed to the rear, and when the knife rises the rack is drawn to the front. A pinion *g* (Fig. 7) mounted on a spindle *f* meshes with the rack *e*. This pinion is firmly connected with the ratchet wheel *h*, the arrangement being such that when the pinion *g* rotates while the knife *b* is moving downward, the ratchet-wheel teeth pass by the click *i*. On the shaft *f* is another ratchet-wheel *k* (Fig. 6) for tensioning the spring *l* when the knife *b* moves upward; this spring *l* is tensioned between an eccentric *m* and a fixed part of the box *a*, so that when the eccentric *m* is rotated while the knife is descending the spring tends to rotate it in the opposite direction. The ratchet-wheel *k* is arrested by the click *n* under the action of the spring *o*. The letter *p* designates a bracket, attached to the box *a*, provided with a bearing for the shaft *f*; above this bearing on the shaft *s* is the friction wheel *q* against which the pyrophoric block *r* is pressed by the spring *s* which acts on a small two armed lever *t* whose one arm presses on the pyrophoric block *r*. The receptacle *u* for the combustible moves on a slide *v* which is guided rectilinearly in slots *w* provided in parts of the fixed box *a*. Springs *w'* tend to pull the slide *v* away from the place where the sparks are formed. In order to hold the slide *v* near the place where the sparks are formed I provide an arresting device comprising a catch x^2 rotatable about the pivot *x'* fixedly mounted on the box *a*, said catch being able to be pressed by the spring *y* against a stop *y'* fixed in the slide *v*, so that when this slide is pushed to the left the catch x^2 holds the stop *y'*. In order to release this arresting device I provide on the pinion *g* a pin *z* which abuts against the catch x^2 when the pinion *g* rotates counterclockwise and thereby unhooks the catch. When the slide *v* has been thus released it is pulled outwardly together with the receptacle *u* by the springs *w'* and the receptacle can now be removed. While sparks are being produced the receptacle is held at the box *a* and moved outward as soon as the wick is ignited.

I claim:—

1. An igniter of the character described, comprising means for producing sparks, an ignitible member movable to and from the spark producing means, means for locking said member when moved to said means, and means to automatically release the locking means.

2. An igniter of the character described comprising spark producing members, a lamp, means to move the latter adjacent the spark producing members, means to hold the lamp in its moved position, means to actuate one of the spark producing members and means to operate the actuating means.

3. An igniter of the character described, comprising a friction wheel, a pyrophoric block in engagement therewith, a toothed wheel connected with the friction wheel, a toothed member engaging the toothed wheel, a lamp, means to move the latter adjacent the friction wheel and block, and means to connect the moving means with the toothed member.

4. An igniter of the character described, comprising a friction wheel, a pyrophoric block in engagement therewith, a toothed wheel connected with the friction wheel, a toothed member engaging the toothed wheel, a lamp, means to move the latter adjacent the friction wheel and block, means to connect the moving means with the toothed member and means to automatically disconnect the latter from the moving means.

5. An igniter of the character described, comprising a friction wheel, a pyrophoric block in engagement therewith, a toothed wheel connected with the friction wheel, a toothed member engaging the toothed wheel, a lamp, means to move the latter adjacent the friction wheel and block, means independent of the moving means to arrest the lamp in its moved position, means to connect the moving means with the toothed member and means to automatically disconnect the latter from the moving means.

6. An igniter of the character described, comprising a pyrophoric block, a friction wheel in engagement therewith, a toothed wheel connected to the friction wheel, a toothed member engaging the toothed wheel, a catch, means to raise and lower the latter, means to move the catch into engagement

with the toothed member when the catch is lowered, means to move the catch out of engagement with the toothed member when the catch is raised, a lever pivoted below the block, a lamp mounted on one end of the lever, means connected with the raising and lowering means to depress the other end of the lever, and a gravity operated member to hold the lever depressed, said gravity operated member adapted to be moved away from the lever by said raising and lowering means.

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

CHRISTIAN HINKEL.

Witnesses:
WOLDEMAR HAUPT,
HENRY HASPER.