W. S. ANDREWS & T. VAN ALLER.

IGNITING DEVICE.

APPLICATION FILED APR. 4, 1910.

985,098. Patented Feb. 21, 1911.

Fig. 1.

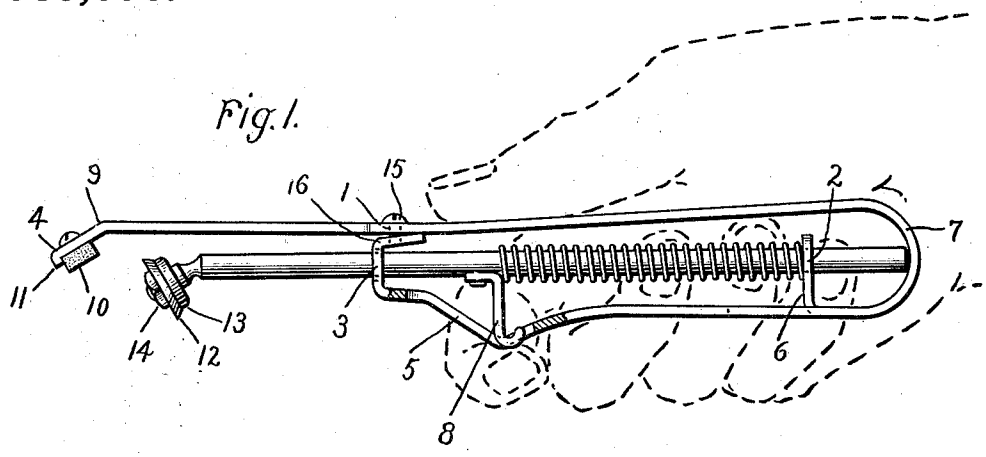


Fig. 2

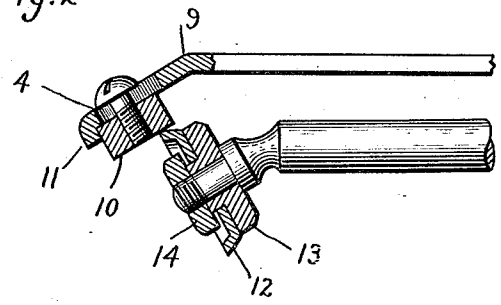
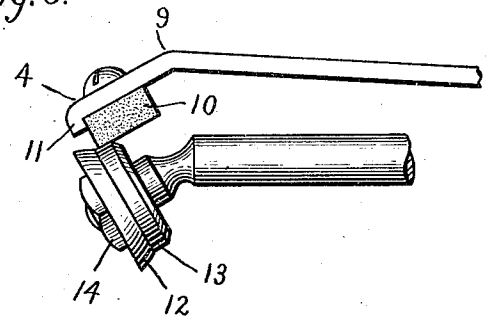


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM S. ANDREWS AND TYCHO VAN ALLER, OF SCHENECTADY, NEW YORK.

IGNITING DEVICE.

985,098. Specification of Letters Patent. Patented Feb. 21, 1911.

Application filed April 4, 1910. Serial No. 553,353.

To all whom it may concern:

Be it known that we, WILLIAM S. ANDREWS and TYCHO VAN ALLER, citizens of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented new and useful Improvements in Igniting Devices, of which the following is a specification.

This invention relates to a device for igniting gas or other vapor jets, the object being to provide an easily manageable instrument for producing sparks to effect ignition, and to dispense with the use of matches commonly employed for this purpose.

In carrying out the invention we use a pyrophoric alloy of iron and cerium or other highly oxidizable metal. This alloy is of great strength and when struck a sharp blow, emits a shower of brilliant hot sparks. In a prior application No. 539,375 filed January 21st, 1910, we described a device of the same general character, but the present device is of improved, simplified and cheapened construction, and it involves moreover structural features, the novelty of which will be hereinafter fully described and will be definitely indicated in the appended claims.

In the accompanying drawing, which illustrates the invention:—Figure 1 is a side elevation partly in section representing the device full size. Fig. 2 is an enlarged view in section showing the instrument in the act of striking sparks, and Fig. 3 is a view showing the position of the parts after they have been operated and have come to rest.

In constructing the device we take a strip of sheet metal, preferably sheet steel, and bend it on itself to form a support for the operating parts and the handle. By suitable punching tools, the strip before bending is perforated at the points 1—2 and 3 with round holes, at 4 with a short slot, and at 5 with a long slot. The ear 6 in which one of the round holes is made is struck from its metal, and bent at right angles as shown. The strip is then bent as shown in Fig. 1. The bend at 7 forms of the two ends a handle by which the device may be grasped, the holes 2—3 form guides for the hammer rod, the slot 5 forms by its side walls a guide for the trigger that is fastened to the hammer rod by a rivet. The sloping wall of the slotted part forms a guide for the finger of the operator, as indicated in the dotted lines in Fig. 1, so that as the trigger is drawn back, the finger must be of necessity slid over the top wall of the slot, and thus release the trigger. A helical spring surrounds the hammer rod, bearing against the ear 6 and the trigger.

The steel strip is bent at an angle at 9, and a small block of the pyrophoric alloy 10 is fastened by a screw as shown, against a stop 11 formed on the strip, thus simply and cheaply anchoring the piece of alloy securely against displacement. The short slot in the sloping part 9 permits the block of alloy to be turned when screw is eased so as to present a new surface and compensate for wear on the alloy. The hammer rod is swaged or turned to a small cross section at the striking end, forming a neck to permit the end of the rod to be neatly bent at an angle, as shown in Fig. 1. The hammer is shod with a cupped washer of high carbon sheet steel 12 turning easily on a supporting washer 13 the hollow stem of which is slightly longer than the thickness of cupped washer, as shown clearly in Fig. 2, and nut 14 locks the parts securely against a shoulder on the rod and yet permits the cupped washer to turn with freedom. This structure is of great practical advantage. The hammer being a cupped steel disk can be sharpened easily and quickly by pressing it against a stone or piece of emery cloth and shifting it to and fro a few times, an operation which requires no skill whatever and always provides a true and sharp scraping edge. The disk being moreover loosely mounted, can easily turn on its axis and shifts slightly in position each time it is actuated, to repeatedly present a sharp edge until the entire rim becomes dulled. When renewal is necessary the disk may be readily removed and sharpened as above directed.

It is of great practical importance in order to make the device reliable, that a proper striking angle be maintained between the hammer and the alloy. This we secure as follows:—The block of alloy is held at an angle and the hammer rod is bent at an angle also so that the cutting edge of the disk hammer moves across the face of the block at a scraping angle as clearly shown, in Fig. 2. In this way the cutting edge cannot dig into the alloy and damage its surface, but merely scrapes across its face under the elastic pressure of the supporting strip which carries the alloy. This

proper relation permits a small piece of the alloy of about the size indicated in the drawing to have a long life, capable of being used many thousands times during a long period of service. Adjustment is provided to regulate the pressure on the hammer when striking. We secure this very simply by bending the members of the strip at a slight angle at 16, so that the screw 15 fitting into a threaded hole 1 may be eased or tightened just enough to provide the best working pressure.

It will thus be seen that with a very few parts we have provided an instrument of hardy construction and reliable action.

In assembling the parts, a block of alloy is fastened by its screw to the spring end. The rod is slipped into its forward guide, and the helical spring slid upon it. The rod is then pushed forward and the rod with spring pressed between the guides. The disk hammer and its supporting bushing are then slipped on the hammer rod and the nut applied. The hole 2 in the rear stop is in line with the end wall of the handle, as shown and thus this wall forms a limit to the thrust of the rod.

It will be noted that when at rest as shown in Fig. 3, the bushing forms a support for the alloy, and holds the hammer in its proper operating relation at all times.

Having thus described our invention what we claim as new and desire to secure by Letters Patent is:

1. A pyrophoric igniting device having a handle and carrier formed of a bent metal strip, a spring actuated striking member moving in guides formed in the body of the strip and a block of pyrophoric alloy adapted to be struck by the hammer.

2. A pyrophoric igniting device formed of a strip of sheet metal doubled to form a handle and provided with holes to form guides, a hammer rod guided by the holes, a spring seated between the two members of the handle and a block of pyrophoric alloy in operating relation to the hammer-rod.

3. A pyrophoric igniting device having a strip of sheet metal forming a handle, and yielding support for the alloy, the two parts of the handle meeting on a slope and an adjusting screw at the point of sloping engagement and a block of pyrophoric alloy and a hammer to engage the same both mounted in the strip.

4. A pyrophoric igniting device formed of a bent strip of sheet metal, a block of pyrophoric alloy mounted on one arm of the strip, a hammer rod guided in the strip, a spring for the hammer rod, and a scraper on the rod engaging the alloy at a scraping angle.

5. A pyrophoric igniting device formed of a bent strip of sheet metal, a hammer, a trigger, punched holes to guide the hammer, an operating spring and sloping guide walls on the strip to force the operator's finger to release the trigger.

6. A pyrophoric igniting device formed of a bent strip of sheet metal, carrying at one end a block of pyrophoric alloy, a spring actuated hammer to strike the alloy, the strip having holes to afford a sliding guide for the hammer, and an operating spring, the entire range of movement of the operating parts being practically within the walls of the device.

7. A pyrophoric igniting device formed of a bent strip of sheet metal, a bent lip at one end to seat a block of alloy, punched guides in the strip, a spring, a hammer rod, and a steel scraper on the hammer rod engaging the alloy elastically at a scraping angle.

8. A pyrophoric igniting device formed of a bent strip of sheet metal, a block of alloy mounted at the end and a screw to secure the alloy, the screw projecting through a slot in the support to permit the turning of the block without removing the screw.

In testimony whereof we have hereunto subscribed our names to the specification in the presence of two subscribing witnesses.

Schenectady, N. Y., March 30, 1910.

WILLIAM S. ANDREWS.
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Witnesses:
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