M. E. WINANS.

LIGHTING DEVICE.

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1,166,873.

Patented Jan. 4, 1916.

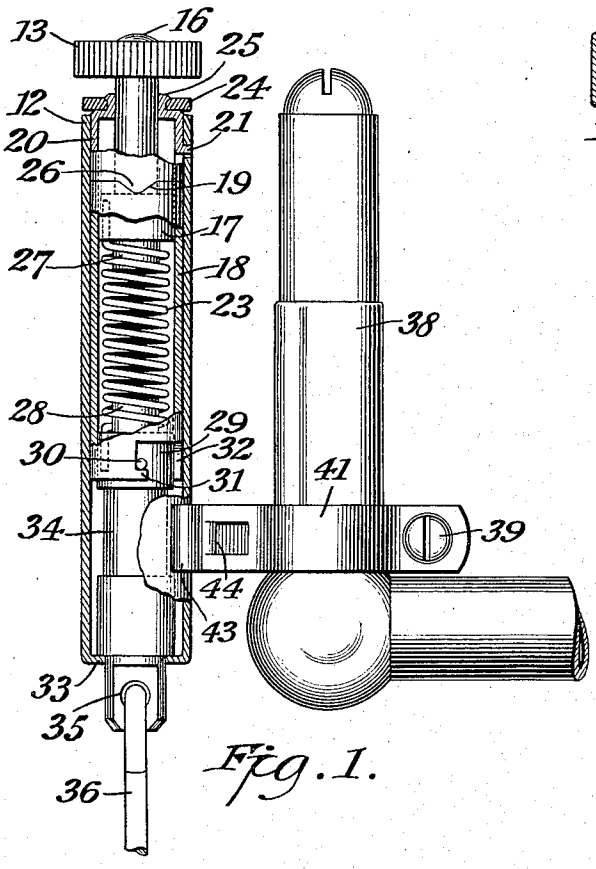

Fig. 1.

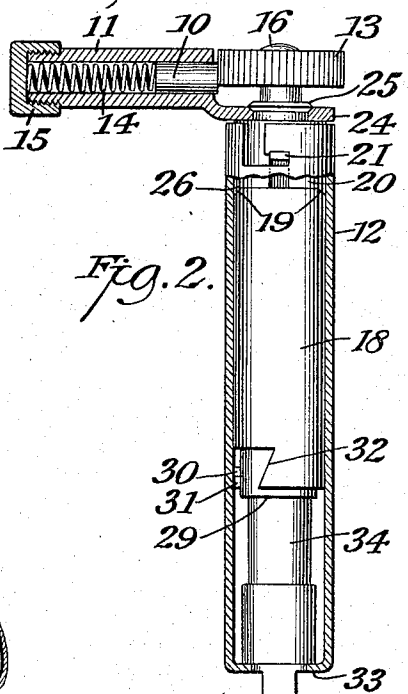

Fig. 2.

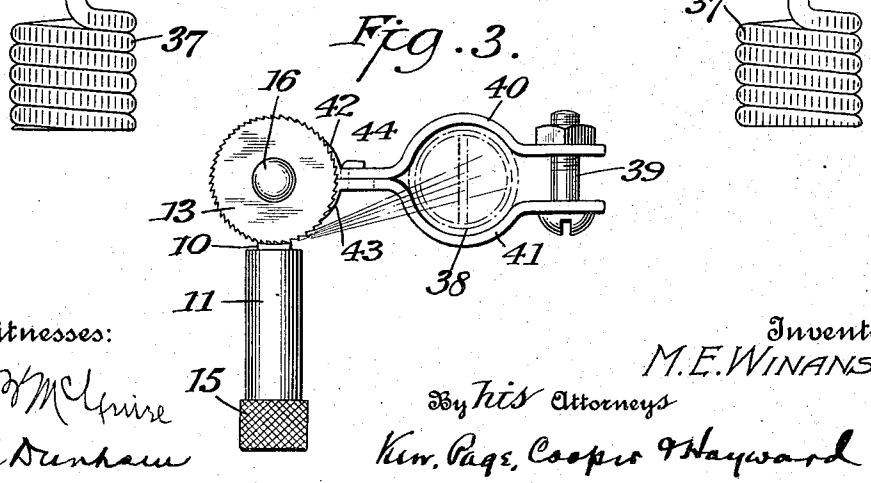

Fig. 3.

Witnesses:

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UNITED STATES PATENT OFFICE.

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LIGHTING DEVICE.

1,166,873. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed May 12, 1915. Serial No. 27,501.

To all whom it may concern:

Be it known that I, MILTON E. WINANS, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Lighting Devices, of which the following is a full, clear, and exact description.

This invention relates to igniters or lighting devices of the kind in which an abrading element is caused to operate upon a body of sparking material, such as an alloy of iron and cerium, to produce a shower or stream of sparks which, upon meeting an inflammable gas or vapor, will ignite the same.

The invention is in the nature of an improvement on the specific device illustrated in my prior Patent No. 1,104,092, dated July 21, 1914, and its object is to improve the device in certain particulars, as will be seen upon reading the subjoined description.

To this and other ends the invention consists in the novel features of construction and combinations of elements hereinafter described.

Referring to the accompanying drawing, in which one form of the invention is illustrated, Figure 1 shows the device in vertical section, applied to an ordinary gas burner. Fig. 2 is a view on a plane at right angles to that of Fig. 1, showing in section the outer casing and the holder for the body of sparking material. Fig. 3 is a plan view of the device in use, indicating by broken lines the stream or shower of sparks projected across the path of the gas issuing from the burner.

The sparking body 10 is mounted in a tubular carrier 11, arranged above the outer casing 12 as hereafter described, and is urged against the abrading device 13 by a coil spring 14 abutting at its outer end on the inside of a cap 15 threaded on the outside of the tube 10.

The abrading disk 13 is fixed on the top of a stem 16 which at its lower end is rigidly connected to a disk or head 17 set solidly in the upper end of a tubular carrier 18 fitting the inside of the casing 12 but rotatable therein. The upper end of the carrier has two cam notches 19 diametrically opposite to each other, and above the carrier is a short tubular member 20 also fitting the casing 12 and having its end swaged in to form a bearing for the stem 16 which, as will be understood, rotates with the aforesaid carrier. On one side of the tubular member is an outwardly projecting lug 21, formed by slitting the member upwardly from the bottom and bending out the upper portion of the tongue so produced. At one side of the casing 12 is a bayonet slot 22 to receive the lug 21, thereby holding the tubular member 20 in a fixed position in the top of the casing. A coil spring 23, hereafter described, urges the member 20 upwardly, with the aforesaid lug in the locking notch in the bayonet slot but permits the member to be pressed down, carrying the lug out of the notch so that the member and connected parts can be withdrawn from the casing 12 through the open top thereof, as explained below. The tube 11, which carries the sparking body 10, is attached to the top of the carrier 20 by means of a collar 24, integral with said tube at the inner end of the same and encircling a short neck 25 on the top of the carrier and around the stem 16. The upper end of the neck is burred down upon the collar 25 to fasten the same firmly and non-rotatively to the top of the tubular member 20. The lower edge of the latter is provided with depending cam lugs 26 to match and fit the cam notches 19 in the upper edge of the tubular carrier 18. It is clear that, by reason of these notches and lugs, and the fact that the tubular member 20 is held by the lug 21 against upward or rotary movement, the tubular carrier 18 can rotate only by first moving axially downward in the casing 12 until the notches 19 are clear of the lugs 26; and that the stem 16 and abrading disk 13 participate in such downward (and rotary) movement of the carrier, since the stem 16, on which the disk is fixed, is itself rigidly connected to the said carrier.

The spring 23 at its upper end encircles a stud 27 depending from the head 17 and its end is fitted tightly in a hole in the latter. At the lower end the spring encircles a stud 28 on top of a head 29 having a hole in which the lower end of the spring is inserted. The head 29 is rotatable in the lower portion of the tubular carrier 18 but has a pin 30 extending outwardly into a recess in the lower edge of said carrier. At

the bottom of one side-edge this recess has a lip 31 lying normally under the pin, and its opposite edge, 32, is inclined as clearly shown in Fig. 2. Ths spring 23 is under tension (produced by twisting it) so as to urge the head 29 counterclockwise (as viewed upwardly from below Fig. 1) and hold the pin 30 against the left edge of its recess. The spring also urges the head downwardly, but the latter is held against movement in that direction by the lip 31 and by the inwardly-swaged lower end of the casing 12, forming a flange 33 against which bears a shoulder on the lower portion of the actuating stem 34 rigidly connected at its upper end to the aforesaid head 29. The lower end of the stem 34 projects out through the flange 33, which serves not only as a stop for the stem as above explained but also as a bearing for the lower end of the stem, and has a hole 35 to receive the hooked upper end of a depending actuating handle 36, formed of a piece of heavy wire. The lower part of the handle is coiled into a close helix 37, the outer surface of which is deeply knurled, to provide a knob of suitable size and shape for convenient grasp by the fingers and thumb in actuating the device.

From the foregoing the operation of the device will be readily understood. When the actuating stem 34 is turned clockwise by means of the handle 36 the tubular carrier 18 cannot rotate (although connected with the stem through the medium of the spring 23) because it is locked at the top by the lugs 26 on the tubular member 20, which for that reason may be conveniently termed a locking member. Hence the effect of turning the stem 34 is to twist (and further tension) the spring, until the pin 30 reaches the inclined edge 32 of the recesses in which it moves. Further rotary movement of the stem 34 now causes the pin to press against the inclined cam edge 32 and hence causes the pin to cam the carrier 18 downwardly in the casing 12. As carrier moves down the inclined lugs 26 on the locking device 20 to permit it to rotate slightly, and with it the abrading disk 13. The relatively slow axial and rotary movement thus imparted to the disk causes the teeth on the latter to scrape off any glaze that may have formed on the sparking body 10, exposing a fresh surface for the subsequent action of the disk. As the carrier 18 continues its downward movement it eventually clears the locking lugs 26, whereupon the tensioned spring instantly revolves the carrier, the stem 16 and the disk 13, thereby scraping the sparking body 10 at high speed and producing an abundant stream or shower of sparks from the fresh surface just previously exposed. The carrier, stem, and abrading disk are brought to rest by the left edge of the recess in the bottom of the carrier coming against the pin 30. At the same time lugs 26 on the locking device 20, revolved 180°, come above the notches in the top of the carrier 18, whereupon the latter is drawn up by the spring 23 into locking engagement with the lugs, accompanied by the abrading disk, which is thus restored to normal or initial position.

When it is desired to examine or adjust the working parts of the device, which are inclosed by the casing 12, the handle 36 is unhooked and the collar 24, Fig. 2, depressed and turned, by grasping the carrier 11, until the lug 21 is free in the bayonet slot 22, whereupon the locking member 20, carrier 18 and actuating stem 34 can be drawn out together.

The device is conveniently fastened to a gas burner, as 38, by means of a clamp and a binding bolt 39. The clamp shown is composed of two strips of sheet metal 40, 41, shaped to embrace the burner and bent at one end to partially encircle the casing 12, as at 42, 43, Fig. 3. The tips of these bent ends are hooked into apertures in the casing, and the two strips are fastened together by a tongue 44 cut from one strip, passed through and bent firmly down upon the other strip.

It is to be understood that the invention is not limited to the specific construction herein illustrated but can be embodied in other forms without departure from its spirit.

I claim:

1. In a lighting device of the kind described, a tubular outer casing, a tubular member fitted in the upper end of the casing and non-rotatable therein, an inwardly extending flange integral with said member at the outer end thereof, a tubular neck integral with the flange and extending outwardly therefrom, a carrier for a sparking body fixed to the outer end of the tubular member, a stem rotatable in said neck and extending through said tubular member, an abrading disk fixed on the stem in position to operate on a sparking body in the aforesaid carrier, and means projecting from the lower end of the outer casing to rotate the said stem.

2. In a lighting device of the kind described, a tubular outer casing, having a bayonet slot at its top, a tubular member arranged in the top of the casing and having a lug engaging the same in said bayonet slot, a stem rotatable in the tubular member and removable therewith, actuating mechanism connected with the stem to rotate the same and removable therewith, an abrading disk on the outer end of the stem, and means carried by the tubular member to hold a sparking body in contact with the abrading disk.

3. In a lighting device of the kind described, a tubular member having at one end an integral inwardly extending flange and a tubular neck integral with the flange, a

stem rotatable in the neck, an abrading disk on the outer end of the stem, a collar encircling the neck and rigidly fixed on the tubular member, a carrier connected with the collar to hold a sparking body in contact with the abrading disk, and means to rotate the stem and disk.

4. In a lighting device of the kind described, a rotary abrading disk, means for holding a sparking body in contact with the disk, and manual means to rotate the disk and adapted to impart an axial movement to the disk relatively to the sparking body.

5. In a lighting device of the kind described, a rotary abrading disk capable of a limited axial movement, means for holding a sparking body in contact with the disk, and manual means to rotate the disk and to shift the same axially relatively to the sparking body at the beginning of the disk's rotary movement.

6. In a lighting device of the kind described, a fixed tubular member having cam lugs on its lower edge, a stem rotatable and axially movable in said member, an abrading disk fixed on the stem, means for holding a sparking body in contact with the abrading disk, a rotary and axially movable member fixed to the stem and having cam notches to fit the cam lugs on the tubular member, and manual means to rotate the said axially movable member, whereby the abrading disk is rotated and moved axially.

In testimony whereof I hereunto affix my signature.

MILTON E. WINANS.