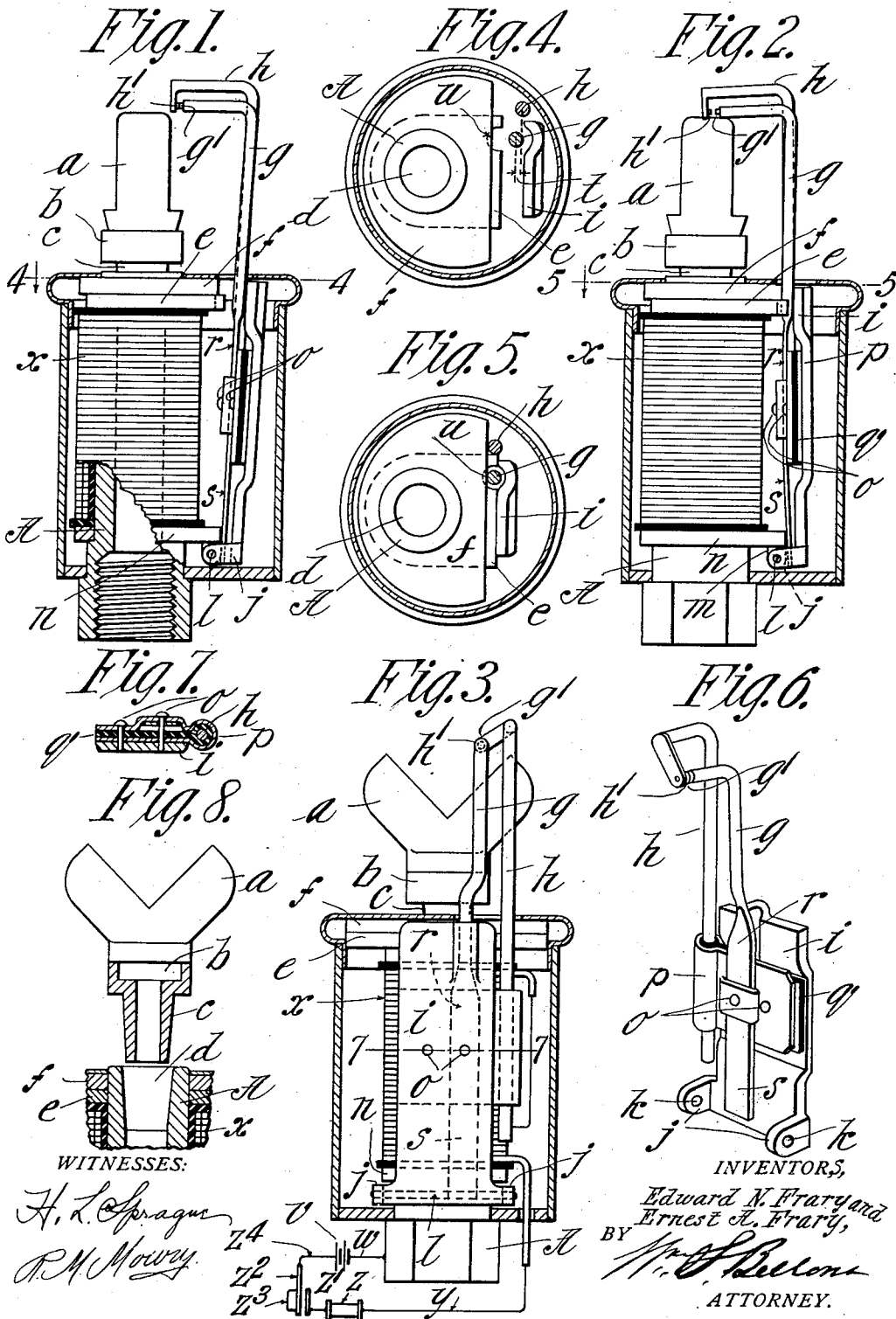


1,015,306.

Patented Jan. 23, 1912.



UNITED STATES PATENT OFFICE.

EDWARD N. FRARY AND ERNEST A. FRARY, OF SOUTH DEERFIELD, MASSACHUSETTS.

GAS-LIGHTING BURNER.

1,015,306.

Specification of Letters Patent.

Patented Jan. 23, 1912.

Application filed November 5, 1910. Serial No. 590,829.

To all whom it may concern:

Be it known that we, EDWARD N. FRARY and ERNEST A. FRARY, citizens of the United States of America, and residents of South Deerfield, in the county of Franklin and State of Massachusetts, have invented certain new and useful Improvements in Gas-Lighting Burners, of which the following is a full, clear, and exact description.

This invention relates to an electric lighting gas burner having for one of its objects the provision in such a burner by a still more simple and inexpensive means than set forth in our application filed August 18, 1910, Serial No. 577,826, of all the requisites for the automatic lighting of the gas issuing at the ignition portion of the burner upon the establishment of a current through the electromagnet which forms part of the device.

Another object of this invention is the provision of such mechanism as to obviate the necessity of using but one spring having the two-fold purpose of separating the two ignition points as well as to retract the ignition portion of the apparatus after the gas has been ignited.

The invention is described in conjunction with the accompanying drawings and set forth in the claims.

In the drawings:—Figure 1 is a side elevation partially in section of the gas lighting burner with parts thereof in their normal position. Fig. 2 is a similar view showing the parts as in their relative position when the conditions for the lighting of the burner are established. Fig. 3 is an elevation with the housing or outer casing of the burner in section showing the internal parts thereof at right angles to Fig. 1. Fig. 4 is a transverse sectional view on the line 4—4, Fig. 1, showing the relative position of the ignition members in their normal position. Fig. 5 is a similar sectional view taken on the line 5—5, Fig. 2, showing the ignition members in their igniting relation to the burner. Fig. 6 is an assembled perspective view of the ignition members of the burner. Fig. 7 is a sectional view taken on line 7—7, Fig. 3, showing the method employed whereby one of the ignition members is insulated from the burner itself. Fig. 8 is a sectional elevation which shows the manner in which the burner tip may be removed from the burner.

Similar characters of reference indicate corresponding parts in all of the views.

In the drawings, A represents the body of the gas burner made of iron and of tubular formation; and in this device such tubular body constitutes the core of an electro- magnet; and the said tubular body is provided at its upper end with a gas delivery tip *a* here represented as of branched formation as usually employed for the burning of acetylene gas.

The delivery tip *a* is provided at its lower extremity with a cylindrically formed boss *b* which is secured to a metallic conically shaped receptacle *c* which may be placed within an opening *d* in the upper extremity of the iron electromagnet core A, and on account of its particular shape may be rendered gas tight by exerting a wringing motion thereto, at the same time pressing down firmly upon the delivery tip *a*.

e represents an iron plate or block formed as an integral part of, or tightly affixed to, an upper portion of the burner body, but below its top, the same constituting an off-side pole piece for the electromagnet. Above this plate or block which constitutes the pole piece of the electromagnet is a body *f* constituting a striking plate or abutment for one *g* of the two upstanding ignition terminals *g* and *h*.

Referring to Fig. 6, it will be seen that the armature *i* for the electromagnet is provided with two outstanding projections *j* having formed therein the openings *k* which are engaged by a hinge pin *l* penetrating a downturned boss formed upon the member *n* which constitutes the base of the electromagnet. Securely connected to the armature *i* by the rivets *o* are the two terminals *g* and *h* which are clamped by the metallic clip *p* through which the rivets are passed. The terminal *h* is surrounded by an insulating member *q* which is inclosed within the clamp plate *p* and has a portion thereof between the clamp plate and the armature *i*, thereby insulating the terminal *h* from the armature, and from any metallic part of the burner. The terminal *g* at its lower shank is flattened to form a spring portion the upper part of which is designated as *r* and the lower part *s*, respectively above and below the clamp. The armature *i* with its equipments may be caused to move in and out toward the burner tip *a* at such times as the electromagnet shall be energized by an electric current passing therethrough.

It will be seen by reference to Fig. 1 that

when the device is in its normal position the lower extremity *s* of the terminal *g* impinges against the member *n* in such a manner as to retract the ignition terminals from the path of the flame. The terminal *g* is arranged slightly in advance of the terminal *h*, and the two ignition tips *h'* and *g'* are normally held in contact with each other by the pressure exerted by the spring portion *r* of the terminal *g*.

At such times as the electromagnet is energized the armature *i* is attracted toward the same and the terminal *g* on account of its advanced position indicated by the witness line *t* strikes the plate *f* at a time when the upper extremities of the terminals *g* and *h* are positioned directly above an opening in the burner tip; and by the force of the electromagnet, which is more powerful than the spring portion *r*, the terminal *g* is retained where it comes in contact with, or is intercepted by, the plate *f*.

The terminal *h* being rigidly secured to the armature *i* is caused to move a distance sufficient to separate the two tips *g'* and *h'*, bringing the terminals *g* and *h* in direct line with each other and both in contact with the plate *f*.

This gas lighting burner may have the wiring connections or circuit establishing conductors provided and arranged as most simple and expedient according to the situation and circumstances of the use of the device; and, for the purpose of ample illustration, in Fig. 3 a battery *v* is indicated, the wire *w* connecting with the iron body of the burner with which the armature is in metallic connection, while the coil wire *x* of the electromagnet connects with the insulated terminal *h* and has the wire *y* also connected thereto which runs to a spark coil *z* connected with a plate *z'* coacting with which is a spring plate *z²* having a push button *z³*, and from such push-button-plate wire *z⁴* returns to connection with the battery *w*.

When the push button is pressed the contact of the plates *z'* and *z²* causes the armature *i* to move in a direction against the pole *e* of the electromagnet, forcing the terminal point *h'* away from the terminal point *g'* as shown in Fig. 2, which is the circuit breaking position, whereupon a spark is created which causes the ignition of the gas issuing from the tip *a* of the gas burner.

Normally the terminals *g* and *h* are out of line with the delivery opening of the tip but operatively the same are brought to a position opposite such delivery opening at the moment the spark is made, thereby igniting the gas which is flowing therefrom.

So soon as the circuit is broken for the making of the spark, the electromagnet is de-energized and the spring portion *s* of the terminal *g* becomes effective for both withdrawing the armature to its normal position away from the pole of the electromagnet and for restoring the movable terminal tips *g'* and *h'* to a position of contact with each other, whereupon the circuit is reestablished and the action is repeated for the making of another spark,—the spark making actions being successively accomplished so long as the portion of the circuit controlled by the push button remains closed; and in case of a possible failure to ignite the gas, another attempt may be made at the will of the operator.

We claim:—

1. A gas burner having an electromagnet combined therewith and an armature therefor, a pair of terminals in circuit with the electromagnet and both bodily carried by the armature, one of said terminals being insulated from the other and having a shank member comprising flat spring portions above and below its place of confinement on the armature, and upper and lower abutment pieces on the body of the burner, against the upper one of which the upper spring portion of the terminal shank engages for securing the separation of the terminals and against the lower one of which abutments the lower spring portion of the terminal engages for securing the retraction of the armature.

2. A gas burner having an electromagnet combined therewith provided at its upper portion with a laterally located pole piece and having a lateral extension at its lower portion, an armature hinged to the lower extension and carrying two terminals, one of which is insulated from the other and which has its shank portion of flat form to constitute spring portions above and below the place of its confinement on the armature, both said terminals being in electrical connection with the electromagnet, an abutment provided at an upper part of the electromagnet against which the upper spring portion of the terminal shank engages,—the lower spring portion of the terminal shank having an armature retracting coaction with said lateral extension.

Signed by us at Springfield, Mass., in presence of two subscribing witnesses.

EDWARD N. FRARY.
ERNEST A. FRARY.

Witnesses:

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