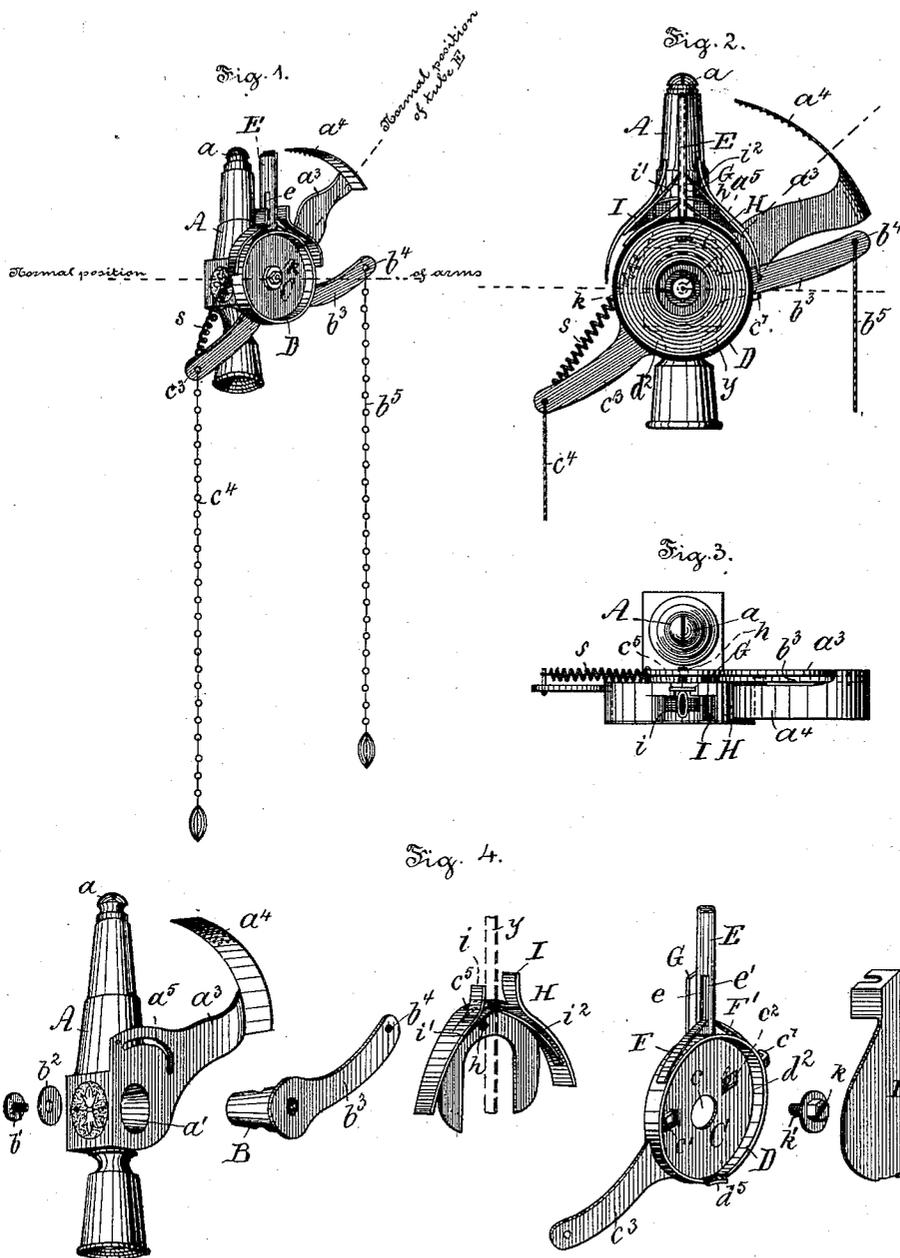


(Model.)

J. H. FARREL.
GAS LIGHTING DEVICE.

No. 421,918.

Patented Feb. 25, 1890.



Witnesses.
Hermann Bornmann.
A. B. Stoughton

Inventor:
John H. Farrel,
by J. W. Allen & Douglass.
Att'ys.

UNITED STATES PATENT OFFICE.

JOHN H. FARREL, OF CAMDEN, NEW JERSEY, ASSIGNOR OF THREE-FOURTHS
TO HENRY W. MAYBAUM, OF PHILADELPHIA, PENNSYLVANIA.

GAS-LIGHTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 421,918, dated February 25, 1890.

Application filed September 17, 1889. Serial No. 324,211. (Model.)

To all whom it may concern:

Be it known that I, JOHN H. FARREL, a citizen of the United States, residing at Camden, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Gas-Lighting Devices, of which the following is a specification.

My invention in general relates to gas-lighting devices as applied to the burners of chandeliers and other fixtures, and it especially relates to that class of lighting devices in which an inflammable or ignitable strip is fed and fired to cause the gas issuing from the burner to be lighted either intermittently with the feeding and firing of the strip or simultaneously with the firing of the strip of the device.

Heretofore gas-lighting devices have been provided with strips composed of fulminating-pellets, which have been fed forward by means of more or less complicated and delicately-adjusted mechanism beneath an oscillating hammer in proximity to a jet of escaping gas, and the pellets exploded by the hammer to cause the escaping gas at the burner to be lighted; but in the practical application of such type of lighting devices the flash produced by the fulminating-pellets is of such minute duration as that the escaping gas is not always ignited, and consequently it often becomes necessary, before being able to light the gas, to explode several of the pellets. Moreover, it is extremely difficult, if not impossible, even when the device is comparatively new, to so maintain the adjustment of the feeding mechanism thereof as to cause the hammer to always strike and explode the pellets, and when the device becomes worn and the parts necessarily more or less disarranged it frequently happens that the hammer fails to explode the pellets, and consequently from such uncertainty in action the device is rendered thereby practically worthless. Furthermore, gas-lighting devices have heretofore been provided with cords or tapes made by drawing them through collodion and steeping in a bath of phosphorus held in solution by bisulphide of carbon, and then passing them through collodion and

drying and coating with shellac varnish or steeping them in a bath of phosphorus held in solution by bisulphide of carbon, and then drawing them through collodion and drying and coating with shellac and varnish.

The principal objects of my present invention are, first, to provide a combined burner and lighting device in which the disadvantages and imperfections above mentioned are obviated and a lighting device furnished which in action is partially automatic and adapted to contain an ignitable or consuming strip, which is fed and ignited to produce a flame continuing to burn until the gas is lighted, in contradistinction to the strips heretofore made having fulminating-pellets for producing a momentary flash when exploded for such purpose; second, to provide a lighting device of durable construction for holding an inflammable strip readily ignitable by friction and the device provided with comparatively simple mechanism to feed said strip to cause it to be ignited at the exposed end thereof by being brought into frictional contact with a scratcher; third, to provide a lighting device with means whereby the flame produced at the exposed end of the strip may be extinguished, and, fourth, to provide a burner with an automatic lighting device of simple construction and comparatively inexpensive, without complicated or delicately-adjusted feeding mechanism, whereby effective action in use of the device is insured.

My invention consists of a lighting device provided with a burner and a receptacle or housing adapted to receive an inflammable or ignitable strip formed, preferably, into a coil, and such a strip as is capable of being readily ignited by friction, and the device provided with means to feed and fire said strip, and simultaneously with the firing allow the gas to flow through the burner to be lighted and the flame at the exposed end of said strip to be then extinguished, and the gas passing through the fixture and burner cut off *ad libitum*.

The nature and characteristic features of my invention will be more fully understood taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is a perspective view of a gas-burner with a lighting device applied thereto and such as embodies the particular features of my invention, and the same provided with depending chains or cords for actuating the device to light and extinguish the gas. Fig. 2 is a front elevation of the burner with a lighting device applied thereto; but the lid or cover of the housing of the device in this view is removed in order to expose to view the ignitable strip formed into coils therein. Fig. 3 is a top or plan view thereof. Fig. 4 is a perspective view, on a larger scale, of the several parts of the device detached and showing their respective relative positions to each other in the device.

Referring to the drawings, A is a gas-burner of any preferred material and construction, and such as may be adapted to a chandelier or other gas-fixtured, and provided with a lava or other suitable tip *a*. This burner A has a seat *a'*, Fig. 4, for the reception of the stop-cock B.

Formed, preferably, integral with the burner is a radial or curved arm *a³*, provided with a scratcher *a⁴*. This radial or curved arm *a³* has formed therein a slot *a⁵*, for a purpose to be presently described.

The stop-cock B, of any preferred construction, is pivotally held to its seat *a'* by means of a screw *b'* and an interposed gasket *b²*. The arm *b³*, secured to or formed integral with the stop-cock B, has an aperture *b⁴*, adapted to receive a chain or cord *b⁵*.

C is a circular plate or disk, made of brass or other preferred material, having a central opening *c* therein and lugs *c'* and *c²* partially cut out, stamped, or secured thereto. This plate or disk C has an arm *c³*, adapted to receive a chain or cord *c⁴*, and it also has a rearwardly-curved dog *c⁷*. An annular rim D, provided with a spring-catch *d⁵*, is secured to the plate C and forms a housing or receptacle *d²* for the ignitable strip *γ*. A tube E, having similarly-disposed parallel slots *e* and *e'* formed therein, is secured to the annular rim D and communicates with the interior of the housing or receptacle *d²*. Similarly-disposed flat springs F and F', secured in any preferred manner to the exterior surface of the rim D, extend into the slots *e* and *e'* of the tube E, and these springs not only support but aid in feeding the ignitable strip in an upward direction through the tube E. The lugs *c'* and *c²* of the plate or disk C are bent parallel with and are slightly in rear of the plane of said plate or disk. A wire or strip G is soldered or otherwise secured at one end to the tube E and at the opposite end to the plate or disk C, which forms ways or bearings *c⁵*. In these ways or bearings *c⁵* slides the inverted-U-shaped traveler H, provided with a lateral pin *h*, which extends into the slot *a⁵* of the radial arm *a³*. Curved strips I, provided with guards or guides *i* and with similarly-disposed feed-strips *i'* and *i²*, extending into the parallel

slots *e* and *e'* of the tube E, are secured to or formed integral with the inverted-U-shaped traveler H.

The plate or disk C and the several parts of the device, as above described, are pivotally connected with the stop-cock B by means of a screw *k* and an interposed gasket or washer *k'*. The cover L of the housing *d²* for the ignitable strip *γ* is held to place against the edge of the rim D by means of the spring-catch *d⁵*.

A spiral spring *s* is attached at one of its extremities to the lever-arm *c³* and at its opposite extremity to any convenient portion of the burner A. The spring *s* performs automatically the function of directing the position of the tube E in respect to the burner when the chain or cord *b⁵* is released, as will be understood from the drawings.

The ignitable strip *γ* for use in the device, and to which preference is given, is made of several sheets of paper or other somewhat similar material coated with substances or materials of a readily-ignitable character, and these sheets, after a suitable treatment to cause them to arrive at their perfected condition, are cut up into strips and preferably formed into coils for use.

The advantages incident to the use of such character of strip are, first, that of the absolute certainty of its igniting to produce a flame instead of a momentary flash; second, the entire strip is composed of substances or materials capable of ready ignition, and, third, such strip lasts longer than those provided with pellets and is less expensive, and economy in time and labor is to be had in the use of such strips, owing to the fact that the entire strip may be consumed before occasion arises to supply a new strip to the device.

The mode of operation of the gas-lighting device is as follows: The cover L of the device being removed, the inflammable strip of readily-ignitable material formed into a coil is mounted in the housing *d²*, and the free end of the same passed between the springs F and F', feed-springs *i'* and *i²*, and the vertical tube E, and said cover then restored to its former position in contact with the edge of the annular rim D, and held in that position by means of the spring-catch *d⁵*. The lever-arm *b³* is then drawn downward by means of the chain or cord *b⁵*, and simultaneously the stop-cock B is turned, which prevents the gas from escaping at the burner. The tension of the spring *s* raises the arm *c³* from the position it occupies in Figs. 1 and 2 and moves the plate or disk C and the parts connected therewith about the screw *k* to the right, so that the pin *h* of the inverted-U-shaped traveler H is afforded a range of movement in the slot *a⁵* of the radial arm *a³* of the burner, thus depressing said traveler H, and with it the feed-springs *i'* and *i²*, the tube E now occupying a position to the right and beneath the scratcher *a⁴*. It will be understood that when the feed-springs *i'* and *i²*

are being depressed the stationary springs F and F' so support the ignitable strip as that the feed-springs slip along the strip without moving the same. In order to light the gas, the arm c^3 is drawn downward by means of the chain or cord c^4 , which causes the feed-springs i' and i^2 to be raised and to feed the ignitable strip y a short distance beyond the tube E, and at the same time the projecting or exposed end of said strip is brought into contact with the scratcher a^4 , thereby igniting the same and producing a flame. The lug or dog c^7 engages the arm b^3 , thereby turning the stop-cock B and allowing the gas to escape from the burner A, while at the same time the burning strip y is brought into close proximity to the tip a of the burner, as clearly illustrated in Figs. 1 and 2, thereby igniting the gas escaping therefrom. When the gas is ignited, the chain c^4 is released, and the spring s returns the tube E to its normal position. The ignitable or consuming strip y is extinguished either by burning down to the upper edge of the tube E or by being smothered beneath the scratcher a^4 .

The inverted-U-shaped traveller H, and with it the feed-springs i' and i^2 , may be actuated and the springs caused to feed the ignitable strip y either while the tube E is advancing toward the gas-burner or while the tube E is receding from the burner A by varying the shape or form of the slot a^3 ; but I prefer, however, to cause the springs i' and i^2 to feed the strip y while the tube E is advancing toward the burner A and scratcher a^4 in order to obviate any tendency of the exposed end of the ignitable strip to again strike against the scratcher a^4 after the gas escaping through the burner has been lighted.

It is manifestly obvious that as to minor details slight modifications may be made without departing in any way from the spirit of the invention, and hence I crave the right to modify the device in such manner as in the more extended practice of the invention will give the most satisfactory results or effective action of the parts for the purposes hereinbefore explained.

Having thus described the nature and ob-

jects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a burner provided with a radial arm having a slot therein and a scratcher connected therewith, of a device provided with a tube and a pin engaging in the slot of said arm, and said device adapted to contain an ignitable strip, and means, substantially as described, to feed said strip through said tube and cause the same to contact with said scratcher, substantially as and for the purposes described.

2. The combination, with a burner provided with an arm and a scratcher connected therewith, of a device adapted to contain an ignitable strip, a vertical tube connected with said device, stationary springs supporting the strip in said tube, a traveler having feed-springs, and means to permit of the strip being fed through said vertical tube to contact with said scratcher, substantially as and for the purposes described.

3. The combination, with a burner provided with a slotted arm carrying a scratcher, of a receptacle provided with a feed-tube and springs and ways and adapted to contain an ignitable strip, a traveler sliding in said ways, and feed-springs caused to contact with said strip, a pin engaging in said slotted arm, and means to actuate said traveler, substantially as and for the purposes described.

4. The combination, with a burner provided with an arm and a scratcher pivotally connected with the stop-cock thereof, of a receptacle provided with a vertical tube adapted to contain an ignitable or consuming strip, stationary springs extending into said tube, and means, substantially as described, to feed said strip through said vertical tube and to cause said scratcher to ignite said strip by frictional contact therewith, substantially as and for the purposes described.

In witness whereof I have hereunto set my signature in the presence of two subscribing witnesses.

JOHN H. FARREL.

Witnesses:

GEO. W. REED,
THOMAS M. SMITH.