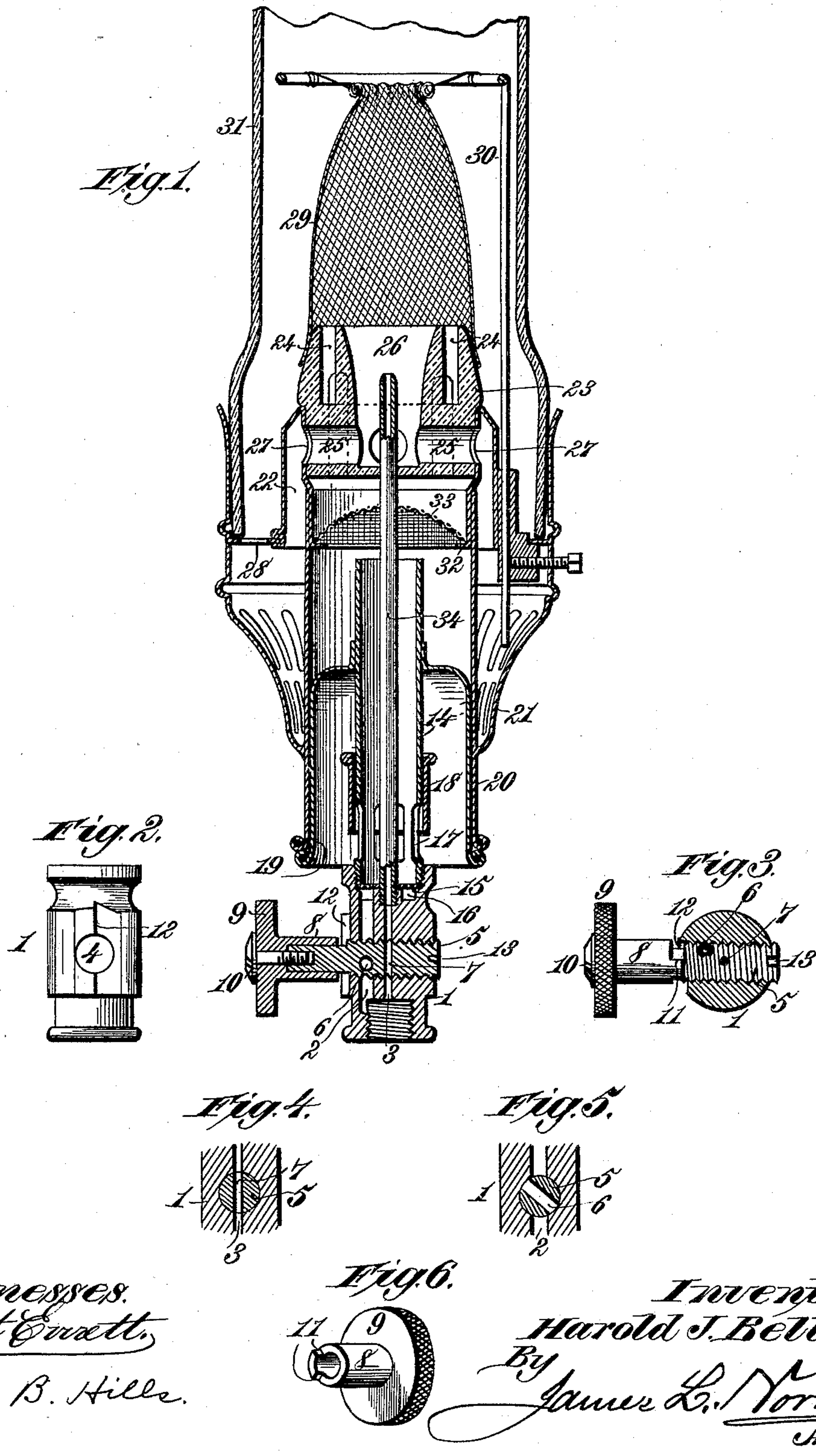


(No Model.)

H. J. BELL.
INCANDESCENT GAS LAMP.

No. 408,069.

Patented July 30, 1889.



UNITED STATES PATENT OFFICE.

HAROLD J. BELL, OF GLOUCESTER CITY, NEW JERSEY, ASSIGNOR TO THE
WELSBACH INCANDESCENT GAS LIGHT COMPANY, OF NEW JERSEY.

INCANDESCENT GAS-LAMP.

SPECIFICATION forming part of Letters Patent No. 408,069, dated July 30, 1889.

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To all whom it may concern:

Be it known that I, HAROLD J. BELL, a citizen of the United States, residing at Gloucester City, in the county of Camden and State of New Jersey, have invented new and useful Improvements in Incandescent Gas-Lamps, of which the following is a specification.

This invention relates to that class of gas-lamps in which the full illuminating effect is produced by the incandescence of a mantle, hood, or frame, of refractory material suspended above the burner.

The object of the present invention is to provide means for constantly maintaining a light in the lamp either by incandescence of the refractory mantle or by a central igniting flame-jet, which igniting-jet serves a three-fold purpose of affording, first, a ready means for obtaining a full and brilliant light instantly without requiring the use of a match or other igniting device after the lamp is once lighted; second, a reliable means of rendering the upper part of the mantle thoroughly incandescent before the full head of gas is turned on to complete and perfect the incandescence, obtaining the full effect of the incandescent mantle in thus giving a light of more than ordinary brilliancy, and, third, the igniting-jet, when supplied with carbureted gas and turned low, provides a night light or taper which gives a certain amount of illumination without any incandescence of the mantle.

My invention consists in the combination, with an incandescing device supported over an Argand burner and a subsidiary or igniting jet located in the center of the main burner, of a gas-cock adapted to control the main and subsidiary gas-passages and provided with a turn-plug having an adjustable stop-button, whereby the rotation of the plug in either direction can be limited to cut off the gas at a predetermined point and regulate the smallness of the subsidiary jet-flame or the lowest point to which it can be turned after the stop-button has been properly set.

In the accompanying drawings, Figure 1 is a vertical section of an incandescent gas-lamp embodying my invention. Fig. 2 is an elevation of the gas-cock with turn-plug removed.

Fig. 3 is a horizontal section of the gas-cock with turn-plug inserted. Fig. 4 is a vertical section through the small gas-passages of gas-cock and turn-plug. Fig. 5 is a similar section through the large gas-passages of cock and plug. Fig. 6 is a perspective view of the shouldered stop-button on one end of the gas-cock plug.

The numeral 1 designates a gas-cock, which is internally screw-threaded at its lower end to adapt it to be securely supported upon a gas-fixture. Its upper end is also internally screw-threaded for attachment of a lamp. This gas-cock is provided with two vertical gas-passages 2 and 3, one of which, as 2, is preferably located a little to one side, as shown in Fig. 1, and is of comparatively large diameter for the purpose of affording passage to the main gas-supply of the burner. The other gas-passage, as 3, is preferably located in the center of the gas-cock, and is of comparatively small diameter, as it is intended only to afford a means for supplying the igniting-jet or night-light flame. The gas-cock 1 is provided, also, with a transverse internally-screw-threaded aperture 4, which intersects the vertical gas-passages 2 and 3 and receives a screw-threaded turn-plug 5, having ports or passages 6 and 7 located to coincide, respectively, with the gas-passages 2 and 3, or to cut off said passages alternately, according to the position of the turn-plug. One end of the turn-plug 5 projects sufficiently to enter the tubular stem 8 of a stop-button 9, which is rigidly secured to the plug 5 by means of a screw 10, the button thus serving as a handle by which the plug can be rotated to regulate or control the flow of gas through the cock. The end of the stem 8 nearest the cock is formed with shoulders 11, which, on the rotation of the plug in opposite directions, may be brought in contact with a vertical shoulder 12 on the body of the gas-cock, and thus serve as stops to limit the rotation of the plug in either direction and prevent it from being turned far enough to cut off both gas-passages 2 and 3 at the same time. A groove 13 in one end of the turn-plug 5 admits a screw-driver, by which, after the screw 10 has been loosened, the plug 5 can be adjusted so

as to bring its gas-passages 6 and 7 into such relation with the stops 11 that when the plug is turned to cut off the gas-passage 2 there will be a sufficient flow of gas through the passage 3 to maintain an igniting-jet, the smallness of which will depend upon the adjustment that is thus given to the turn-plug. An igniting-jet or night-light flame can thus be provided which cannot be diminished beyond a certain predetermined point, controlled by the adjustment of the turn-plug, though by rotating said plug in the proper direction the size of the igniting-jet can be increased to the full capacity of the gas-passage 3, for the purpose of affording a larger night-light, or to render the upper portion of the mantle incandescent before the further rotation of the turn-plug delivers a full head of gas to the burner.

As shown, the incandescent gas-lamp is provided with an atmospheric gas-tube 14, the lower end of which is screwed into the upper end of the gas-cock, above a perforated annular disk 15, that is supported in the cock. Beneath the perforated disk 15 is an annular chamber 16, which communicates with the large gas-passage 2, said annular chamber serving to bring the main flow of gas in contact with the entire under surface of the perforated disk, in passing through which it is divided into a number of fine currents, by which its mixture is facilitated with the air admitted through the lateral inlets 17 of the atmospheric gas-tube. A sleeve 18 is frictionally supported on the atmospheric gas-tube 14 in position to be vertically adjusted thereon to control the admission of air through the inlets 17, as may be required.

The atmospheric gas-tube 14 supports a bell-shaped shield 19, which surrounds the lateral air-inlets 17 at a distance therefrom, and in turn supports a burner-tube 20, to which the lamp-gallery 21 is attached.

On the upper end of the burner-tube 20 is supported an annular double-walled cap 22, which is open at bottom and closed at top. In this cap 22 is set the Argand burner 23, which may be made of any suitable refractory material. The Argand burner is formed with an annular series of vertical gas-exits 24, which communicate below with the main gas-passage through the burner-tube. Between the vertical gas-exits 24 is arranged an annular series of horizontal air-inlets 25, which communicate at their inner ends with the central air-passage 26 of the burner, and at their outer ends with openings 27, formed in the inner wall of the annular double-walled cap 22, which forms an air-chamber around the burner. The lower outer edge of this annular cap 22 is beaded or grooved, as shown, to assist in supporting the annular perforated plate 28, which forms part of the chimney-gallery.

The mantle, hood, or frame 29, of refractory incandescing material, is suspended from

a vertically-adjustable rod 30 and surrounded by a chimney 31, as usual.

Beneath the Argand burner 23, on the inner annular ledge 32 of the cap 22, is supported a hemispherical diaphragm 33, of wire gauze or suitable perforated material, for the purpose of effecting an intimate finely-divided mixture of gas and air before it enters the burner.

The perforated disk 15, burner 23, and perforated diaphragm 33 are each centrally perforated for passage of an independent gas-tube 34 of small diameter, which passes through the atmospheric gas-tube 14, and is screwed into the upper end of the gas-cock 1 in line with the small central gas-passage 3, the upper end of said gas-tube 34 being inclosed in or surrounded by the Argand burner 23, as shown, in such a manner that it will afford an igniting-jet for the mantle or a small flame for use as a night-light whenever required.

The operation of the lamp will be readily understood. It will be seen that when the lamp is lighted and the gas-cock is turned so as to bring the passages 3 and 7 in communication with each other, but not fully open, a small flame will be maintained at the upper end of the gas-tube 34 within the center of the Argand burner. This small flame will serve as a night-light and as an ever ready means of igniting the mantle, which is effected by turning the gas-cock sufficiently to open the passages 3 and 7 to the fullest extent. The elongated jet-flame which is thus made to issue from the tube 34 will pass upward through the center of the mantle 29 and quickly bring its upper portion into a state of thorough incandescence. This flame will also heat the Argand burner, so that in a moment, on turning the gas-cock sufficiently to close the passages 3 and 7 and open the passages 2 and 6, the full head of mixed gas and air thus admitted to the burner will inflame and cause the mantle to become incandescent. On turning the gas-cock backward to close the passages 2 and 6, the passages 3 and 7 will again be open, the mantle will cease to be incandescent, and the heat of the burner and mantle will instantly reignite the small central flame, which can be regulated at will to serve as a night-light, or as a means for again inflaming the mantle.

What I claim is—

1. In an incandescent gas-lamp, the combination, with a main gas-passage and an auxiliary or independent gas-passage, of a gas-cock having a turn-plug provided with ports or passages located at an angle with each other, whereby one will be open when the other is closed, and a detachable and adjustable stop-button located at one end of said turn-plug, whereby its rotation can be limited to cut off the gas at a predetermined point, substantially as described.

2. In an incandescent gas-lamp, the combi-

nation, with a main gas-passage, an Argand burner, an incandescent device, and a central subsidiary gas-jet, of a gas-cock for controlling the main and subsidiary gas-passages
5 and provided with a turn-plug having an adjustable stop-button, whereby the rotation of the plug in either direction can be limited to cut off the gas at a predetermined point and regulate the lowest point to which the sub-

sidiary gas-jet can be turned after the stop-button has been set, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

H. J. BELL.

Witnesses:

HARRY E. BANCROFT,
CHAS. D. WASHBURN.