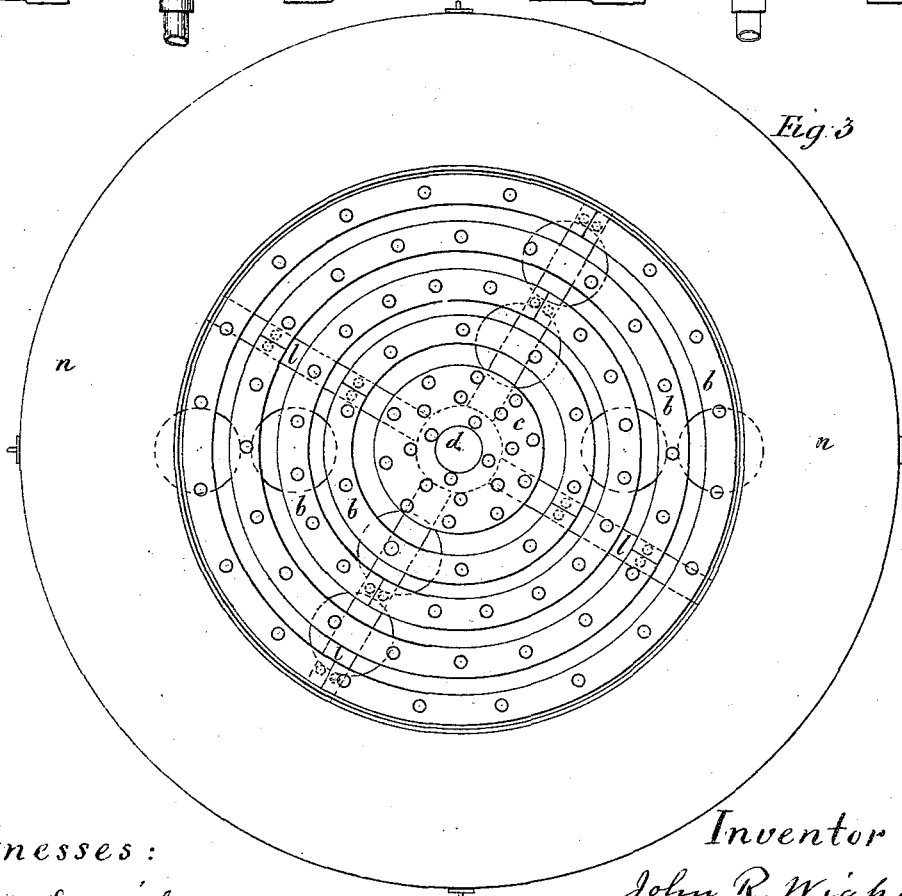
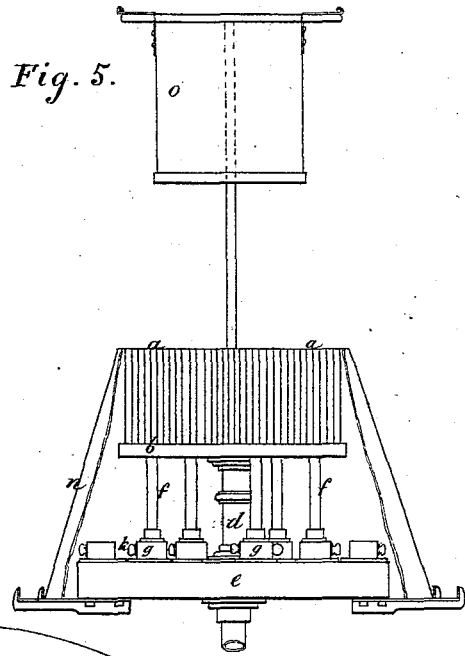
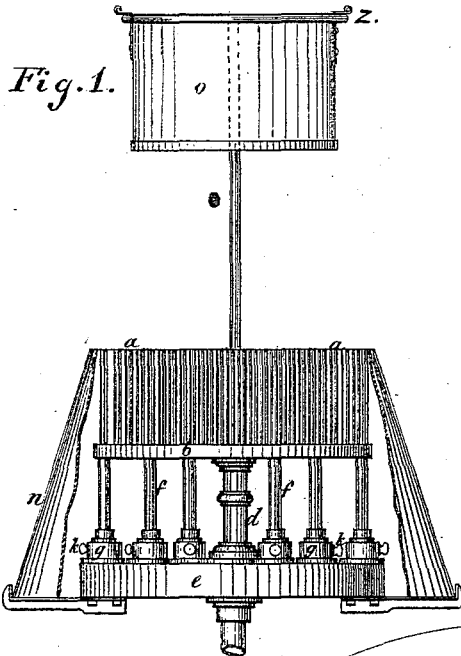


J. R. WIGHAM.  
Gas-Burners.

No. 148,909.

Patented March 24, 1874.



Witnesses:

*W. A. Daniels &  
A. H. Paris*

Inventor:

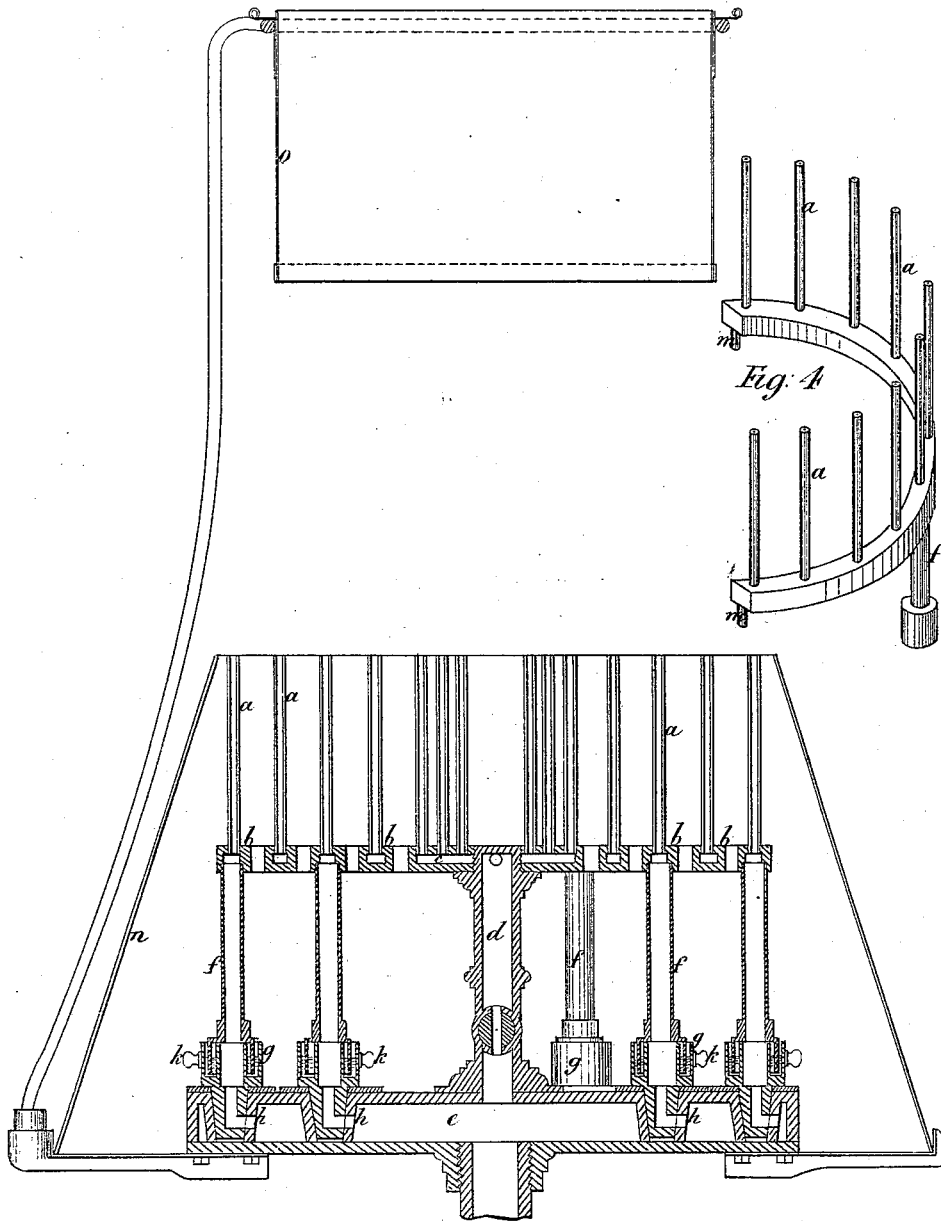
*John R. Wigham  
by C. L. Whitman atty.*

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Fig. 2.



Witnesses:

H. A. Daniels  
A. W. Davis

Inventor:

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# UNITED STATES PATENT OFFICE.

JOHN RICHARDSON WIGHAM, OF ALBANY HOUSE, MONKSTOWN, IRELAND.

## IMPROVEMENT IN GAS-BURNERS.

Specification forming part of Letters Patent No. 148,909, dated March 24, 1874; application filed December 6, 1873.

*To all whom it may concern:*

Be it known that I, JOHN RICHARDSON WIGHAM, of Albany House, Monkstown, in the county of Dublin, Ireland, have invented an Improved Gas-Burner for Illuminating Light-Houses and other localities; and do hereby declare that the following description, taken in connection with the accompanying drawings hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvement, by which my invention may be distinguished from others of a similar class, together with such parts as I claim and desire to secure by Letters Patent—that is to say:

My invention relates to an improved construction of gas-burners, whereby I am enabled to dispense with the use of chimney-glasses, while a light superior to that of gas-burners heretofore employed is obtained therefrom; furthermore, by a device to be hereafter described I am enabled to reduce and increase the volume of light of such burners, at pleasure, without impairing the efficient action of the burner when used in connection with reflecting or refracting apparatus.

My improved gas-burner is shown on the accompanying drawings, of which Figure 1 shows an elevation, with part of the lower casing removed to show the internal structure. Figs. 2 and 3 show, respectively, a vertical section and a plan to an enlarged scale. Fig. 4 shows a perspective view of a half-ring of jets separated from the body of the burner, as will hereafter be described; and Fig. 5 shows an elevation of the burner reduced in size by removing the outer ring of jets, part of the lower casing being removed, as in Fig. 1, to show the internal structure.

The burner consists of a number of concentric circles of jets issuing from small tubes *a*, which project upward from the hollow rings *b*, surrounding a central sheaf of like tubes, which project upward from a cylindrical cavity, *c*. The latter cavity is connected by an upright pipe, *d*, provided with a stop-cock, to a gas-supply chamber, *e*, which forms the base of the burner. The central sheaf of jets, with their supply-cavity *c* and pipe *d*, forms the fixed or permanent part of the

burner, which may be employed when only a low illuminating power is required. When greater power is wanted, the rings *b* can be added successively, so as to extend the burner, their connection to or removal from it being effected by means which I will now describe. Each of the rings *b* is made in halves, one of such halves being shown in perspective at Fig. 4, and has a tubular stem, *f*, for conducting the supply of gas from the chamber *e* up to the cavity of the ring. This stem *f* is placed loosely in an annular trough formed in a socket-piece, *g*, and mercury or other liquid being poured into this trough, a hydraulic joint is at once formed, making a gas-tight connection of the stem-tube *f* to the socket *g*. The lower part of the socket *g* is made tapering, like the plug of a stop-cock, and fitted into a tapering seat formed in the supply-chamber *e*. A lateral hole, *h*, is bored into the plug of *g*, and the plug can be turned round in its seat by the hand applied to a knob, *k*, until the hole *h* of the plug is brought to face a hole bored through the conical seating into the chamber *e*. When the plug is so turned, the gas can flow through the plug and up the stem *f* to supply the half-ring *b*, and the jets therefrom. To regulate the gas-supply, or cut it off entirely, the socket *g* can be turned so as to diminish or entirely obstruct the passage *h* in the manner of a stop-cock. The half-rings *b*, when they are in place, rest by their ends on radial bars *l* projecting from the central part of the burner, and those ends have studs *m*, which enter holes in the radial bars, so as to steady the half-ring in its proper position. Although I prefer to make the rings *b* in halves, for facility of removal, yet it will be evident that entire removable rings may be used. The object of these movable rings of burners is to increase or diminish the light, according as the state of the atmosphere requires it.

By removing the outer rings of burners when a reduced amount of light is required, I prevent the obstruction of the lower rays of lights from the flame, which would be caused by the jets of the outer ring if they were left standing. If, instead of regulating the amount of light by the means described, this were effected by merely raising or lowering the height

of the flames from all the jets, the efficiency of the burners, more particularly as regards the local position of the flame relative to the reflecting or refracting apparatus employed in connection therewith, would be impaired.

The burner is surrounded by a conical casing or equalizer, *n*, which has the effect of equalizing, and to a certain extent concentrating, the supply of air passing upward to the several jets. When the burner is reduced in size by the removal of one or more of the rings *b*, the equalizer *n* is replaced by one of proportionally smaller size, as shown at Fig. 5, which represents the burner with its outer ring removed. Over the burner is suspended by a ring an oxidizer, *o*, being a cylinder or short tube or chimney, by which the products of combustion pass upward. It is made of somewhat smaller diameter than the burner, and the effect of this, combined with the conical form of the equalizer *n*, is to make the flame converge inward, and thereby to produce a very vivid illumination. When the burner is reduced in size, a smaller oxidizer is used, as shown in Fig. 5. As the flame in many cases extends to a considerable height above the

points of the jet-tubes *a*, I prefer to make the oxidizer *o* of talc, a material that is transparent, and at the same time little liable to injury by heat.

Having thus described the nature of my invention, and in what manner the same is to be performed, I claim—

1. The removable ring or rings *b* of jets, which can be added to or separated from the burner, as and for the purposes described.

2. In a burner having attachable and separable rings of jets, the stop-cock plug *g*, with an annular trough forming a hydraulic joint for the tubular stem *f*, as and for the purposes described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses this 15th day of November, 1873.

JOHN RICHARDSON WIGHAM.

Witnesses:

JOHN DONOHOE,

*Dublin, Householder.*

PATRICK HAYES,

*1 Anglesea St., Dublin.*