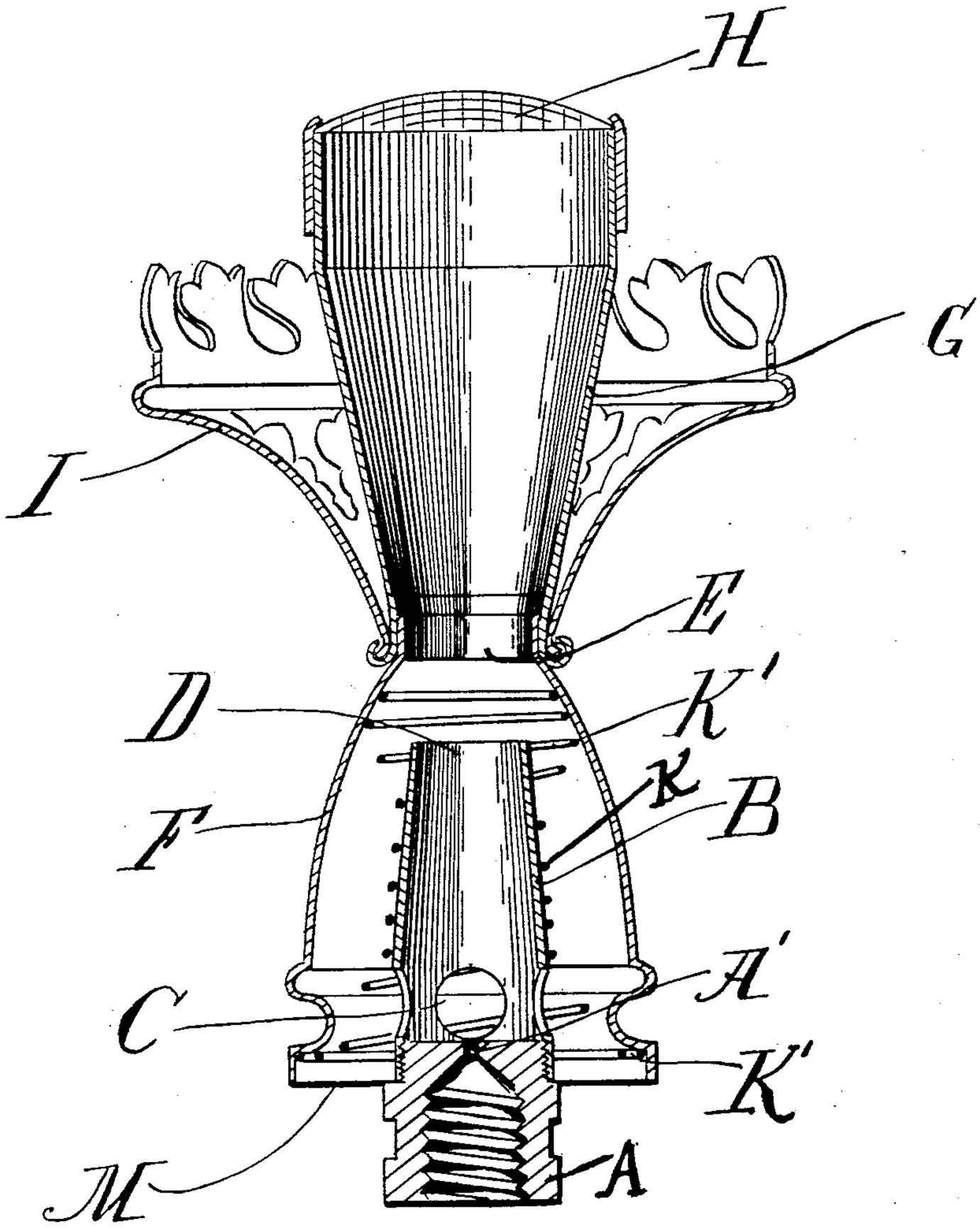
No. 751,558. PATENTED FEB. 9, 1904.

V. A. RETTICH.

INCANDESCENT GAS BURNER.

APPLICATION FILED MAY 27, 1903.

NO MODEL.



Witnesses:
C. C. Marshall.
F. T. Chapman

Inventor:
Victor A. Rettich,
By Lyons & Rising,
Attorneys.

No. 751,558. Patented February 9, 1904.

UNITED STATES PATENT OFFICE.

VICTOR ALEXANDER RETTICH, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO STANTON D. BULLOCK, OF MONTCLAIR, NEW JERSEY.

INCANDESCENT GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 751,558, dated February 9, 1904.

Application filed May 27, 1903. Serial No. 159,004. (No model.)

To all whom it may concern:

Be it known that I, VICTOR ALEXANDER RETTICH, a subject of the King of England, and a resident of the borough of Manhattan, in the city and State of New York, (post address No. 224 West One Hundred and Thirty-third street, New York,) have invented certain new and useful Improvements in Incandescent Gas-Burners, of which the following is a specification.

The invention relates to that class of burners known in the gas-lighting art as "Bunsen" burners, and has for its object the production of a burner which is capable of burning with a flame that will raise a mantle to hyperincandescence.

The flame of the ordinary Bunsen burner is readily distinguishable from the hyperincandescent-burner flame by the following characteristics: The Bunsen flame has an inner or reducing zone of a greenish color and does not lie close to the burner-gauze or other head which may be used for combustion. It is unsteady and flickers and reaches to some height from the burner-head. The outer or oxidizing zone is of a deep blue color and of a long undecided shape, incapable of a very intense heat by itself and requires a chimney or other artificial means to steady it, so as to bring the mantle up to a point of high incandescence. On the other hand, the hyperincandescent-burner flame has a whitish-blue inner zone lying close to the burner-head and is quite steady and firm. Its outer zone is of a transparent purple color of a short decided nature and gives intense heat, so that a short mantle of suitable shape on being placed in its outer edge emits a very brilliant light, and it is unnecessary to use a chimney to obtain perfect combustion. The burners hitherto used to produce this hyperincandescent flame have of necessity been provided with extra long mixing-tubes as compared with the Welsbach burners now commonly in use, without which lengths excessively hot flame could not be produced and the mantles intended to be used with this flame have had to be shorter than is customary to adapt themselves to the before-mentioned short flame.

My invention enables the hyperincandescent flame to be formed with an outer zone of such length that much longer mantles may be used than heretofore. Yet the entire length of my burner remains approximately the same as the aforesaid Welsbach burner, enabling my burners to be grouped or assembled in various ways that are impractical with the longer-shanked Bunsens. Furthermore, my burner offers ready means for rendering it proof against the destructive shocks caused by vibration, it is readily taken apart for regulating and cleaning purposes, and each burner embodies in its construction a suitable base or platform on which it may stand and safely support the mantle when occasion arises to remove it from its normal burning position.

My burner is constructed with the usual small jet-orifice, through which the gas issues in a fine stream under the influence of the obtainable gas-pressure and then forms an air and gas mixture by the use of an upward and inwardly tapered conical tube or lower Bunsen section provided with air-apertures in close proximity to the jet-orifice. This inwardly-tapered conical tube is from one to two inches in length and is arranged within an outer shell that is freely open to and readily admits the air. The outer shell carries a top Bunsen section, preferably of an outwardly-flaring form, arranged so that its lower end is from one-quarter to three-quarters of an inch removed from the top opening of the lower Bunsen section. This compels the air encased by the outer shell to mingle with the air and gas mixture propelled upwardly from the lower Bunsen section at the space between the lower and upper Bunsen sections. The completely-mixed gases then pass with increased velocity into the upper Bunsen section or suction-tube. This upper tube is provided with a suitable gauze or equivalent combustion head.

The invention is fully explained in the accompanying drawing, which is a central longitudinal section of the burner, showing my improvements.

I use the customary nipple A, having the

jet-orifice A′, upon which is screwed or otherwise secured the inwardly-tapering lower Bunsen section B, provided with air-inlets C at a point immediately above the jet-orifice A′. The parts thus far described are screwed on or secured to the usual gas-bracket, and it is not necessary to remove them during the normal life of the burner, except possibly for the purpose of cleaning the jet-orifice A′.

I provide a helical spring K, having a central portion which fits the lower Bunsen section B and upper and lower portions K′ of larger diameter. This helical spring K is slipped over the lower Bunsen section B, as is shown in the drawing, and is thus supported thereon.

There is an outer shell F, which is made of a shape to rest upon and be supported by the upper and lower portions K′ of the helical spring. Secured to this outer shell F is the upper Bunsen section G, which, as before stated, is preferably outwardly flaring, and the globe-support I. The globe-support I, the upper Bunsen section G, and the outer shell F are spun together at E in the manner indicated in the drawing—that is to say, the curled lower edge of the globe-support I is placed in the circular gutter at the bottom of the upper Bunsen section G, and this gutter is spun down on the curled edge by any suitable means. The upper end of the shell F is thereupon inserted into the lower end of the Bunsen section G and is flared outwardly by appropriate mechanism to bind these parts together. The upper Bunsen section G is provided with the usual piece of gauze. The outer shell F bridges but does not inclose the air-space between the upper and lower Bunsen sections.

It will be noticed that the outer shell F, the globe-support I, and the upper Bunsen section G form one structure. In order to assemble the parts of my burner, the helical spring K is placed upon the lower Bunsen section B and the outer shell F, with the parts to which it is united, is placed upon the upper and lower portions of the helical spring K′, which support them in a resilient or yielding manner. The mantle is supported above the jaws H by the usual standard secured to the globe-support I, which standard it is considered unnecessary to show. It will now be clear that when gas under pressure issues from the orifice A′ it is mixed with air drawn in through the orifices C, and by reason of the inwardly-tapering character of the lower Bunsen section D the mixture of air and gas at an increased velocity passes upwardly to the upper Bunsen section G; but in traversing the space between the upper and lower Bunsen sections an additional quantity of air supplied from the air in the outer shell is added to the air and gas mixture, so that a hyperincandescent flame is ultimately produced above the gauze H.

The mantle which is used with this burner is seen to be supported in an elastic manner above the nipple A, which is secured to the rigid gas-bracket. It is therefore not so liable to be injured by shocks. If it be desired to remove a worn mantle and to replace it by a fresh one, the structure F I G may be raised off the spring-sections K′ and be set upon a table in order to have solid support. The lower surface M of the shell C is made flat for this purpose.

I note that while it is essential to produce a hyperincandescent flame to make the lower Bunsen section inwardly tapering the upper Bunsen section may be made cylindrical, although an outwardly taper is preferable for this part.

I claim—

1. A Bunsen burner comprising a lower inwardly-tapered section, an upper section, separated therefrom by an air-space, a shell mounted to bridge but not inclose the air-space, and means for supporting the upper section and shell, substantially as described.

2. A Bunsen burner comprising a lower inwardly-tapered section, an upper outwardly-tapered section, separated therefrom by an air-space, an outer shell mounted to bridge but not inclose the air-space, and means for supporting the upper section and shell, substantially as described.

3. A Bunsen burner comprising a lower inwardly-tapered section, a helical spring supported thereon, and an outer shell elastically supported on the helical spring, and an upper Bunsen section secured to the shell, with an air-space between the upper and lower Bunsen sections bridged but not inclosed by the shell, substantially as described.

4. A Bunsen burner comprising a lower inwardly-tapered section, and an outer shell, an upper Bunsen section and a globe-support spun together, and means for supporting the same above the lower section so as to leave an air-space between the upper and lower Bunsen sections which is bridged but not inclosed by the shell, substantially as described.

5. A Bunsen burner comprising a lower inwardly-tapered section, a helical spring supported thereon, an outer shell, a globe-support and an upper Bunsen section, spun together and supported elastically upon the helical spring so as to leave an air-space between the Bunsen sections which is bridged but not inclosed by the outer shell, substantially as described.

6. A Bunsen burner comprising a lower inwardly-tapered section, a helical spring having a central portion, and expanded upper and lower portions, the central portion resting upon the lower tapered section, and an outer shell, a globe-support, and an upper Bunsen section, spun together, and supported elastically upon the expanded portions of the helical spring so as to leave an air-space between the

Bunsen sections which is bridged but not inclosed by the outer shell, substantially as described.

7. A Bunsen burner comprising a lower inwardly-tapered section, a helical spring supported thereon, an outer shell, an upper Bunsen section and a globe-support, the lower portions of the globe-support and upper Bunsen section being spun together and to the upper portion of the outer shell and all elastically supported upon the helical spring, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

VICTOR ALEXANDER RETTICH.

Witnesses:
MILLIE TETZTOFF,
JOHN T. FITZGERALD.