

GAS LAMP.

989,092.

WITNESSES:

N. Abramson
B. E. Carpenter

INVENTOR

George Wedderburn

UNITED STATES PATENT OFFICE.

GEORGE WEDDERBURN, OF VIENNA, VIRGINIA.

GAS-LAMP.

989,092.

Specification of Letters Patent. Patented Apr. 11, 1911.

Application filed November 29, 1909. Serial No. 530,297.

To all whom it may concern:

Be it known that I, GEORGE WEDDERBURN, a citizen of the United States, residing at Vienna, in the county of Fairfax and State of Virginia, have invented certain new and useful Improvements in Gas-Lamps, of which the following is a specification.

This invention refers to gas lamps of the inverted arc type and particularly to the means used for increasing the brilliancy or candle power of the gas mantles.

In the common form of gas lamps of the inverted type wherein an imperforate globe is usually employed, the air supply is not directed to the immediate zone of combustion where the mantles are incandescing in such a way as to develop the maximum of brilliancy or candle power, which they are capable of developing under a given gas supply.

To increase the brilliancy of incandescing mantles without increasing the amount of gas consumed is the object of the present invention. The end desired is attained by directing the air supply below the mantles and to the Bunsen mixer or burners in such a way that a proper mixture of heated air and gas is effected in the mixer and a fresh supply of air is brought to the mantles and flame in a strong upward stream. In this manner abundant oxygen is furnished the incandescing mantles within the immediate zone of combustion. The circulation of inflowing air and outflowing gases thereby induced assists in the efficient exhaust of burned air and gas.

Another object of the invention is to provide improved means for removably holding the outer cylinder on the supply pipe.

A still further object of the invention is to provide a simple gas valve comprising a needle valve working against a suitable seat and with a positive action controlled by a key operated pinion.

With the above and other objects in view the invention consists in certain combinations, constructions and arrangements of parts, clearly illustrated in the accompanying drawings, in which,

Figure 1 is a vertical sectional view of the lamp, Fig. 2 is a detail perspective view of a transparent air directing sleeve, Fig. 3 is a detail view of a latch, and Fig. 4 is a detail vertical sectional view of the controlling valve, and Fig. 5 is a detail transverse sectional view thereof.

Referring to the accompanying drawings which illustrate the invention 1 denotes a cylinder which is open at both ends and which is provided with an ornamental head piece 2, suitably attached to the upper end thereof. On the lower end of the cylinder 1 a number of latch devices 3 are pivotally supported and each of these latch devices is provided with a pin 4, projecting through the wall of the cylinder. The pins 4 removably hold four cross arms 5, the ends of which are provided with sockets for the reception of said pins. The lower ends of the latch devices are bent outwardly so that they can be easily manipulated.

A mantle holding device consisting of arms 6 and depending tubes 7, is fixed to the cross arms 5, and on the lower ends of the tubes 7 incandescent mantles 8 are secured, so as to be below the plane of the lower end of the cylinder 1.

A Bunsen mixer 9 is secured to the cross arms 5 so as to communicate with the tubes 7, and extends vertically above the arms 5. The upper end of the mixer 9 is connected to the gas supply pipe 11. With the cylinder 1 an air inlet tube 12 is arranged. The upper end of this pipe or tube is flared so as to form a wide air intake. This upper end is disposed above the upper end of the cylinder so as not to obstruct the flow of gases. The lower end of the intake pipe or tube 12 is contracted to snugly fit around the casing of the mixer 9, to which it is suitably secured, as by a screw 13.

The valve casing 10 is formed with vertical guideways adapted to guide a rack 14, which is provided on its lower end with a needle valve 15, adapted to close an opening 16 in the bottom wall of said valve casing. The valve rack 14 is operated by a pinion 17 secured on a shaft 18, which is provided with a removable key 19, which key extends through the cylinder 1. A slight turn of the pinion 17 will lift the valve 15 from its seat or opening 16, or place it in a closing position against said seat or opening. This improved valve affords an easy and sure control over the flow of gas and is always positive in operation.

Above the valve casing 10 a valve casing 20 is secured to the pipe 11, which casing is provided with an operating arm 21, of the usual nature. A pilot tube 22 is connected to the casing above the valve therein and is provided with a screw 23 for regulating the

flow of gas therethrough. This pilot tube or pipe is passed through the upper end of the intake tube and terminates in a burner or jet 24, which is held near the mantles 8, so that the same can be brought to incandescence without a match, as in the ordinary construction. The arm 21 is provided with suitable chains or other means for operating the same.

10 On the lower end of the cylinder 1 a globe support 25 is secured at 26. This globe support is flared downwardly and outwardly of the cylinder so that a space is formed between the lower end thereof and the adjacent portion of the cylinder. The flared lower end of the globe support 25 is provided with air inlet openings 27. On the lower end of the support 25 a globe 28, which is formed with an open upper end but is preferably imperforate throughout, is secured by means of screws 29, in such a way that a passage 30 is established between the upper end of said globe and the lower part of the cylinder, through which passage air may pass from the inlet openings 27 to feed the flame of the mantles 8.

In order to direct the air flowing through the inlet openings 27 to the immediate zone of combustion or to the lower part of the mantles, so that a positive upward current of fresh air will be created at this point, an air directing sleeve 31 is slidably secured, being frictionally held in place, to the lower end of the cylinder 1. This sleeve is made of mica, glass or other suitable heat resisting material of a transparent nature, and is provided with hand holds 32, whereby the same may be adjusted on the cylinder 1. The best results are secured by arranging the lower end of the sleeve 31 below the lower tips of the mantles, as shown in Fig. 1.

When gas is supplied to the mantles by opening the upper valve and said gas is ignited so that the mantles will be brought to a state of incandescence, an increased amount of candle power or brilliancy will be developed in the mantles. The wide air intake pipe or tube 12 will permit an abundance of air to be conveyed to the Bunsen mixer 9, without resistance, and the air in passing through said tube or pipe 12 will be effectively heated by the gases rising in the cylinder 1, from the mantles 8, so that the illuminating power of the mixture produced in the mixer will be increased, as a result of the heating. The upward movement of the escaping gases will assist in drawing air through the inlet openings 27 so the flame of the mantles will be served by a strong stream of fresh air, directed by the sleeve 31 to the immediate zone of combustion or to the lower part of the mantles. It is thus seen that the escaping heat and gases are utilized to stimulate the flow of fresh air to the Bunsen mixer and to the mantles di-

rectly. The result of this arrangement is that a remarkably high degree of brilliancy is produced by the heated mantles.

Photometrical tests have established the fact that the improved lamp will give from sixty to a hundred per cent. more candle power of illumination than the best of the ordinary incandescent gas mantle lamps in current use, comparing lamps of equal mantles, while with a ground glass globe a very soft and pleasing light is produced.

In order to dismantle the lamp the globe 28 is first removed and the holding arms 5 are disengaged from the latches 3, and the key 19 removed from the socketed end of the valve stem 18. When this has been done the entire cylinder can be moved downwardly from the pipe 11, and any adjustment or change desired can be effected. The mantles, however, can be changed without removing the cylinder 1.

Having described my invention I claim:—

1. In combination, a cylinder having open ends, a closed supply pipe within the cylinder, a mixer on the lower end of the pipe midway of the cylinder ends, burners having mantles depending from the mixer, and an air inlet preheating tube of smaller diameter than the cylinder provided with a contracted lower end secured to the mixer and a flared upper end projecting above the upper end of the cylinder.

2. In combination, a cylinder having open ends, a supply pipe within the cylinder, a Bunsen mixer on the lower end of the supply pipe and above the lower end of the cylinder, a mantle holding device connected with the mixer, an air intake preheating tube connected with the mixer, mantles on the holding device depending below the cylinder, a sleeve on the cylinder depending below the mantles, and an air inlet device secured to the cylinder above the sleeve.

3. In combination, a cylinder having open ends, a supply pipe within the cylinder, a mixer on the supply pipe, holding arms having socketed ends on the mixer, and latches on the cylinder having pins adapted to fit into the socketed ends of the holding arms for holding said arms in place thereon.

4. In combination, a cylinder having open ends, a supply pipe within the cylinder, a mixer connected with the supply pipe, mantles depending from the mixer, and an air inlet preheating tube having a contracted lower end and a flared upper end within the cylinder with said lower end secured to the mixer and said upper end projecting above the cylinder.

5. In combination, a supply pipe, a mixer on the lower end of the supply pipe, a valve above the mixer on said pipe, a preheating tube forming a fresh air conduit for the mixer and formed with a contracted lower end secured thereby to the mixer and formed

with a flared upper end extending above
and over the mixer, a mantle holding device
supported on the lower end of the mixer,
arms extending laterally of the holding de-
5 vice, said arms having their ends socketed, a
cylinder of considerably larger diameter
than the preheating tube surrounding said
tube, latches on the cylinder engaging the
socketed ends of the arms of the holding de-
10 vice, mantles on the holding device, a sleeve

on the lower end of the cylinder, and a globe
supported on the cylinder surrounding the
mantles.

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

GEORGE WEDDERBURN.

Witnesses:

EDWIN B. SALISBURY,
N. ABRAMSON.