

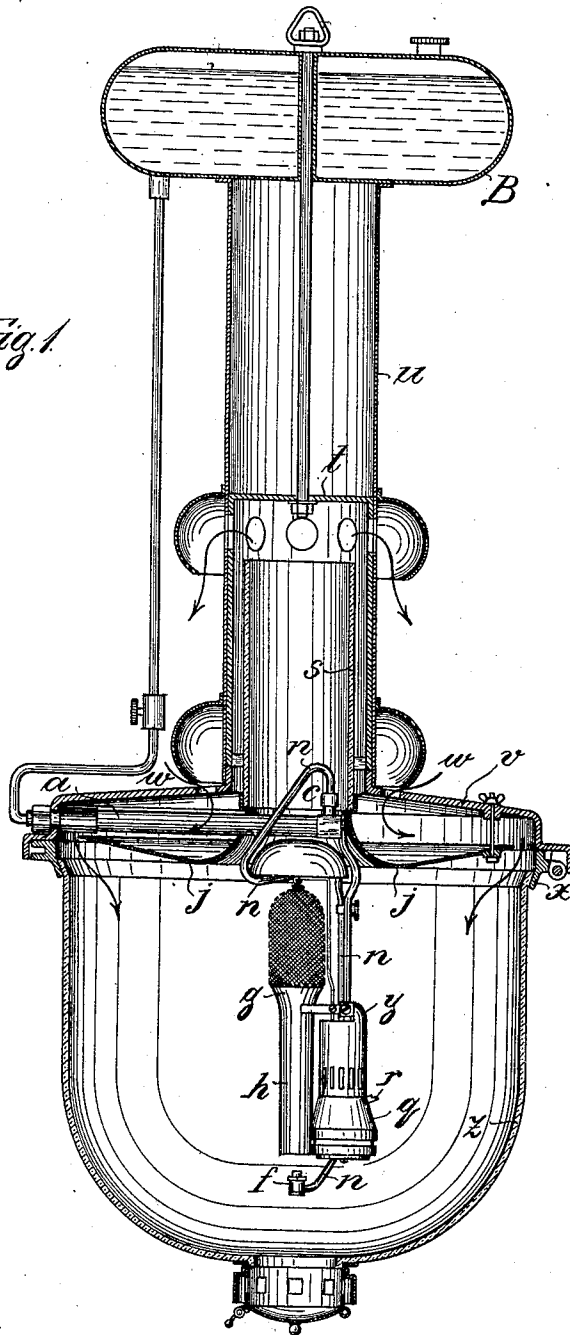
M. MEISSNER.
 INCANDESCENT VAPOR LAMP.
 APPLICATION FILED OCT. 28, 1909.

1,005,651.

Patented Oct. 10, 1911.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
 Alfred Lyons.
 Michael H. Hummer

Inventor:
 Max Meissner.
 by L. K. Böhm,
 Attorney.

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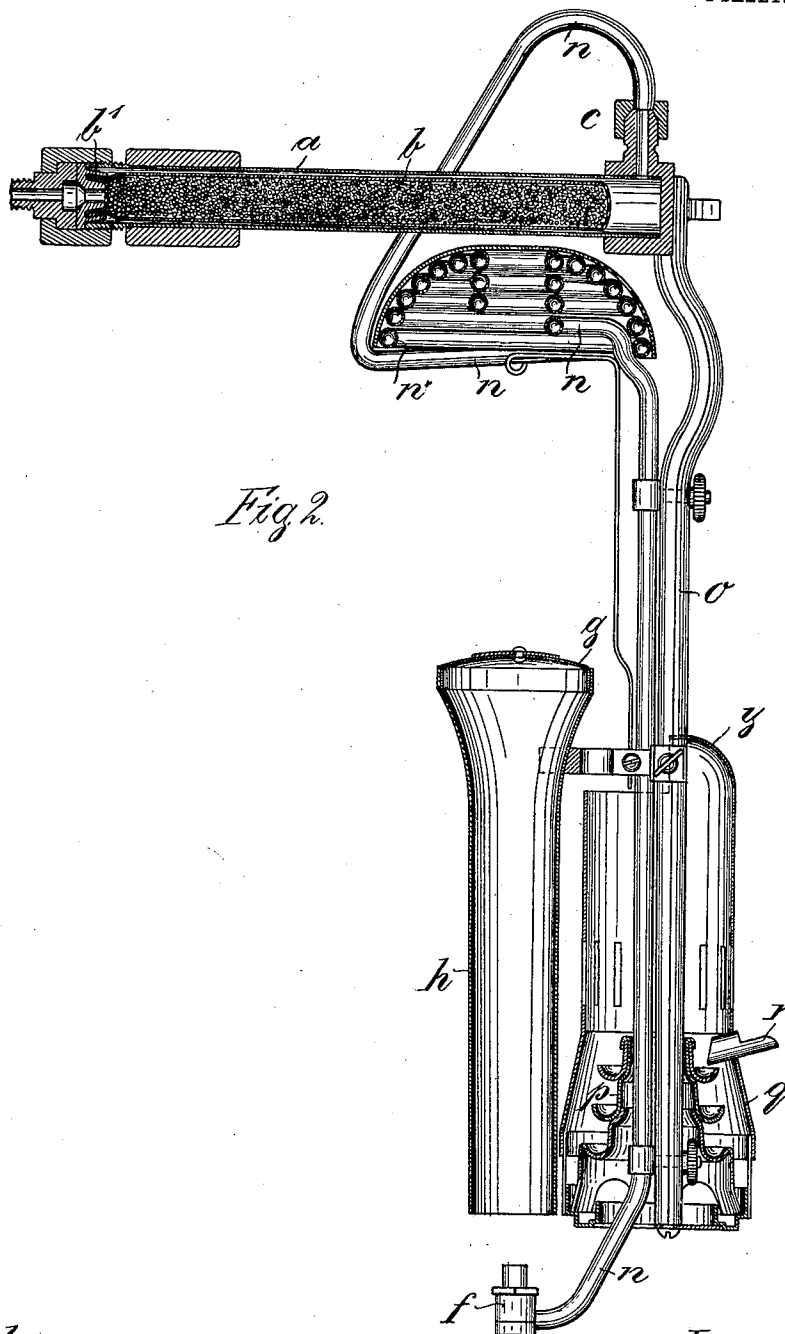


Fig. 2.

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UNITED STATES PATENT OFFICE.

MAX MEISSNER, OF LEIPZIG, GERMANY.

INCANDESCENT VAPOR-LAMP.

1,005,651.

Specification of Letters Patent.

Patented Oct. 10, 1911.

Application filed October 28, 1909. Serial No. 525,101.

To all whom it may concern:

Be it known that I, MAX MEISSNER, a subject of the King of Saxony, and resident of 34 Pfaffendorferstrasse, Leipzig, Germany, have invented new and useful Improvements in Incandescent Vapor-Lamps, of which the following is a specification.

This invention relates to an incandescent vapor lamp in which the combustible is not led to the vaporizer under artificial pressure; that is, it is fed to the vaporizer without applying any pressure medium.

The object of the invention is to provide for constant and uniform burning in such a lamp. Such constant and uniform burning has only been attainable in vapor lamps with the greatest difficulty and in a very unsatisfactory manner, and further, even vapor lamps employing artificial feeding pressure have not given entire satisfaction. In such lamps it frequently occurs that when the pressure falls for any reason whatever irregular burning and flickering of the flame takes place and even striking back of the flame may occur. Even when the nozzle opening was increased after cleaning, such reductions in pressure were followed by the disadvantages mentioned.

According to the present invention the vapor from the vaporizer is passed through a comparatively thin tube arranged with several windings in dome-shaped form, and this tube is subjected to the direct heating action of the burner. In this way such an intense superheating of the vapor occurs that the gas passes to the nozzle with such a high velocity that a comparatively low pressure may exist in the vaporizer without producing any disadvantageous action. The important feature which determines the steady uniform combustion of the lamp is the exceedingly high velocity of exit which results from the intensive superheating action obtained, and the means for obtaining this superheating action consist in forming the connection tube from the vaporizer to the nozzle of dome-shape composed of coils arranged directly over the burner. The vaporizer itself may in the known manner be arranged vertically or horizontally above the flame.

The invention is illustrated in one convenient form in the accompanying drawings in which:

Figure 1 is a vertical section through the lamp and Fig. 2 is a section in detail show-

ing the arrangement of the burner, vaporizer and superheater.

In carrying the invention into effect according to the form shown, the combustible is contained in a holder B arranged above the lamp. The combustible from the holder B is led merely under the pressure due to the height of the holder B into the vaporizer *a* which is illustrated as horizontal. Within the vaporizer *a*, see Fig. 2, there is arranged a tube *b* which is formed at both ends as a sieve and contains any granular material such as broken glass. The combustible permeates in a known manner through this tube and yields up to the glass or other material filling said tube all tarry constituents and those which do not readily vaporize. The vapor from the vaporizer *a* passes at *c* to the tube *n* and through this tube to the nozzle. The tube *n* is formed below the vaporizer into a number of coils arranged in dome-shaped form directly above the burner.

In the form shown it will be seen that the tube *n* first passes to the bottom of the coil and advances in the coils *n'* upwardly. At the upper end the coils again advance downwardly and within the first coils *n'*. The nozzle tube *n* is then led to the nozzle *f* which is arranged as low as possible in the globe *z* preferably in the lowest quarter so as to utilize as much as possible the available height of liquid pressure. The burner head *g* is arranged on a comparatively long and wide mixing tube *h* and the gases passing with a high velocity from the nozzle *f* take with them into the wide mixing tube *h* sufficient air, and this mixture of combustible and air in consequence of the comparatively long path in the mixing tube *h* passes out at the burner head *g* with considerable velocity. In practice it is found that the vapor passing from the burner head *g* is so highly superheated that it is invisible. All angle pieces are to be avoided in the burner head so as to make the resistance to the flow of gas as small as possible. It may be here remarked that such angle or tortuous paths for the mixture are not necessary as the mixing effected in the long mixing tube *h* is found to be sufficiently intimate.

It will be seen in Figs. 1 and 2 that the mixing tube *h* is widened upwardly and this widening corresponds approximately to the form of the stream of vapor and air passing from the mixing tube to the burner head. With this arrangement greater steadiness

is obtained in the flame and the combustion in the lamp attains its maximum efficiency more quickly than if the mixing tube *h* were formed cylindrical. From the vaporizer *a* there extends downwardly a rod *o* which acts as a conductor of heat from the pre-heater *p*. The pre-heater *p* is arranged around the rod *o* and tube *n* in the known manner and consists of several cups arranged in tiers. The pre-heater is surrounded by a casing *q* in which there is an opening for admitting the filler *r*. When the spirit or the like is fed to the cups *p* through the filler *r*, and ignited, the massive rod *o* of a good heat conducting metal, such as copper, conducts the heat to the vaporizer. The vapor passing from the vaporizer *a* through the tube *n* is further heated by the pre-heater owing to the fact that the tube *n* passes centrally down through the pre-heater. As soon as the vapor starts to pass through the nozzle *f*, and the main flame is ignited at *g*, the vaporization and superheating proceeds further in the automatic manner described. As can be seen from the drawing the casing *q* is at its upper end provided with a lip *y* which surrounds the conducting rod *o*. The pre-heating flame in consequence of the arrangement of the cups in tiers is exceedingly long and by the arrangement of the lip *y* this flame is directed on to the nozzle tube *n* and the coils *n'*. In this way the time necessary for pre-heating or starting the lamp is reduced to a minimum.

The lamp body in which the vaporizer *a* is supported is preferably made of cast iron. Such material allows the supporting arrangement for the vaporizer *a* to be exceedingly easily obtained and owing to the ease with which cast iron may be worked it is possible to arrange the supporting ring *x* for the globe *z* tightly jointing against a suitable face on the casing. This is a matter of considerable importance as it is necessary that the cold air does not have access to the interior of the globe around the ring *x*. It is much preferable to arrange so that the air, required principally for combustion at the burner head *g*, is caused first to pass over those parts of the lamp which are highly heated. The arrangement shown in Fig. 1 is calculated to attain this end. The fresh air for combustion enters through the openings *w* in the cover *v* of the cast casing and must therefore in passing to the interior of the bell come in contact with comparatively thick-walled parts, and thereby if the openings are not too wide becomes heated so that it exerts no harmful cooling action on the vaporizer.

At the lower end of the supporting tube *u* on which the holder B is supported, there is provided a cover *t*. A short distance below the cover *t*, the outlet openings for the

products of combustion are provided and over these outlet openings as can be seen there is arranged a wind protecting cap. By arranging the outlet openings at such a distance beneath the holder B the heating of the holder is prevented. By arranging the fresh air openings *w* in the cover *v* comparatively low it is possible to provide a comparatively wide cylinder *s* for the combustion gases and to this cylinder the reflector and guide plate *j* is fastened. The low position of the fresh air openings also avoids the objection frequently found in former constructions that the fresh air supply to the lamp suffers both in quantity and quality from the action of the products of combustion. The holes *w* are only intended to serve for the supply of the secondary air required at the burner head *g*. The primary air drawn into the mixing tube *h* by the vapor issuing from the nozzle *f* enters preferably from the bottom of the globe *z*.

In the description of the vaporizer *a* it has been mentioned that an inner tube *b* is provided having any suitable form. Such an inner tube with granular or light material is known as applied to vertical vaporizers. Hitherto these inner filter tubes were closed by brazing. This however is not advisable. Instead of brazing it is proposed to form the inner filter case out of one piece and then to pass this piece into a brass casting *b'* with an annular opening. The casting *b'* can then be rolled and pressed so as to grip the tube *b* in any known manner. By forming the tube *b* in one piece and by omitting all brazing the cost of production is smaller and thereby it is possible when the filter material is used up to discard the used filter and insert a new one. Further by using drawn metal a much thinner walled tube is obtained and thereby the filter casing is much more easily heated. In filter casings which were used after re-filling it was impossible to employ such thin-walling for the casing, on account of the danger of burning through. By means of the improved filter casing however the construction is not only rendered cheaper and simpler but the new filter casing performs its function in the lamp much better.

I claim:

1. In an incandescent vapor lamp the combination with a vaporizer and a superheating coil directly above the burner, of a pre-heating device below said coil and at one side of the burner tube and in proximity thereto, and means for deflecting the flame from the pre-heater toward the superheating coil.

2. In an incandescent vapor lamp the combination with a vaporizer and a superheating tube having a dome-shaped coil directly above the burner, of a pre-heating device below said coil and at one side of the burner

tube and in proximity thereto, a vertical tube surrounding the preheating device and a curved plate surmounting the upper end of said vertical tube for deflecting the flame from the pre-heater toward the superheating coil.

3. In an incandescent vapor lamp, the combination of a horizontal vaporizer tube above the burner, a superheating coil above the burner and arranged intermediate said vaporizer and burner, a pre-heating device, adjacent to the lower end of the burner tube and suspended by a heat conducting rod from the vaporizer and means for deflecting the flame from the pre-heater toward the superheating coil.

4. In an incandescent vapor lamp, the combination of a vaporizer arranged over the burner, a superheating tube having a dome-shaped coil directly above the burner, a pre-heating device adjacent to and at one side of the burner tube, said preheating device surrounding the end of the superheating tube leading to the burner, and means for deflecting the flame from the pre-heater toward the superheating coil.

5. In an incandescent vapor lamp, the combination of a vaporizer arranged over the burner, a superheating tube having a dome-shaped coil above the burner, a pre-heating device adjacent to the lower end of the burner tube and suspended by a heat conducting rod from the vaporizer, and means for deflecting the flame from the pre-heater toward the superheating coil.

6. In combination with a vapor burner, a vaporizer arranged above the burner, a nozzle arranged below the burner, a superheating tube connecting said vaporizer and nozzle, a preheating device arranged on one side of said burner, a casing surrounding said pre-heating device and also the superheating tube, and a lip at the upper end of said pre-heating device to direct the heating flame on to the superheating tube and vaporizer, substantially as described.

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

MAX MEISSNER.

Witnesses:

ALEX STONZ,

RUDOLPH FRICKE.