(No Model.)

W. STERN & J. MÜCKE.

GENERATIVE GAS LAMP.

No. 421,325. Patented Feb. 11, 1890.

Fig. 1.

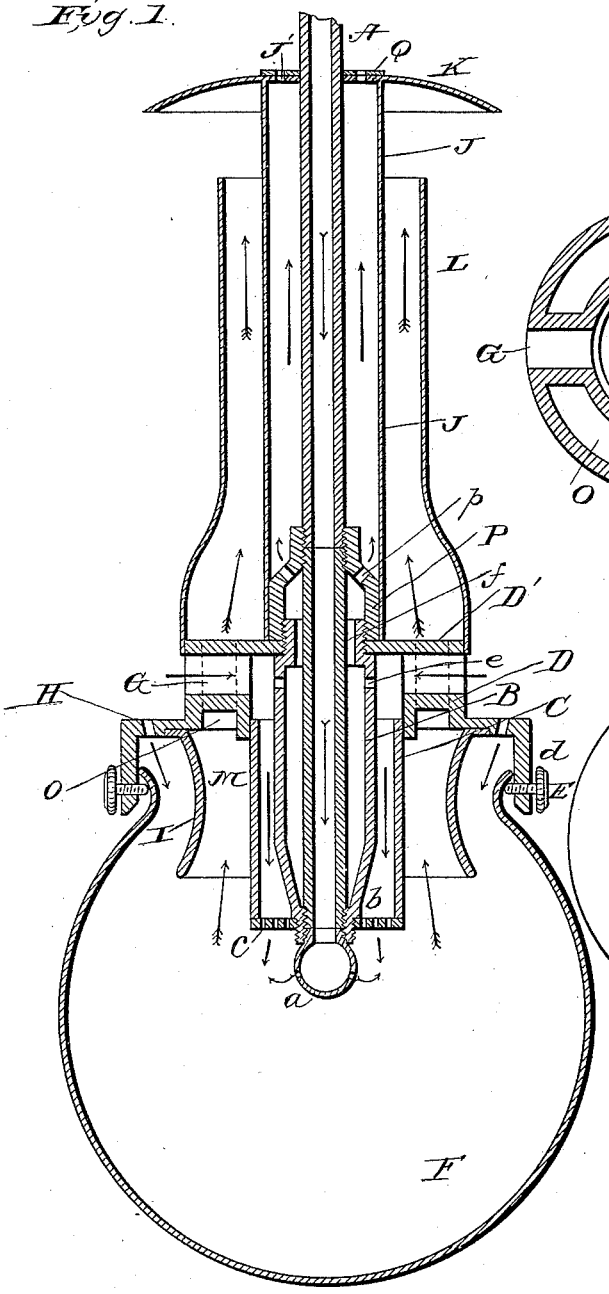
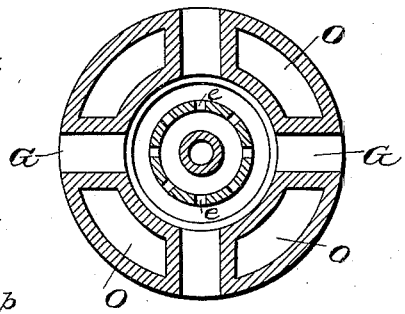


Fig. 2.



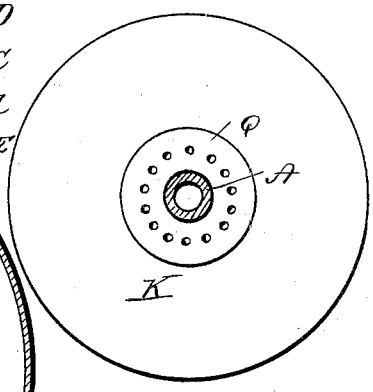


Fig. 3

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UNITED STATES PATENT OFFICE.

WILHELM STERN AND JOHANN MÜCKE, OF BERLIN, GERMANY.

GENERATIVE GAS-LAMP.

SPECIFICATION forming part of Letters Patent No. 421,325, dated February 11, 1890.

Application filed August 15, 1889. Serial No. 320,865. (No model.)

To all whom it may concern:

Be it known that we, WILHELM STERN and JOHANN MÜCKE, both subjects of the King of Prussia, and residents of Berlin, in the Kingdom of Prussia and Empire of Germany, have invented certain new and useful Improvements in Generative Gas-Lamps; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

Figure 1 is a vertical sectional view through the axis of our improved gas-lamp. Fig. 2 is a transverse sectional view on the plane denoted by the broken line marked *x x* in Fig. 1, and Fig. 3 is a top plan view of the lamp.

Like letters of reference denote corresponding parts in all the figures.

Our invention has relation to so-called "regenerative gas-lamps," in which a depending burner is so arranged within a suitable globe as to deflect the flame in a downward direction around a depending air-tube, which supplies the burner with the atmospheric air necessary to perfect combustion; and our improvement consists in the detailed construction and combination of parts of a lamp of that class, as will be hereinafter more fully described and claimed.

Reference being had to the accompanying drawings, the letter A designates the central gas-pipe, through which gas is supplied to the spherical burner *a* at the lower end of the pipe, said burner being provided with a suitable number of fine apertures for the escape of the gas. Fastened to the lower end of the gas-pipe, immediately above the burner, is a cylinder B, the lower end of which is tapering or contracted, as shown at *b*, and provided with a screw-threaded collar, forming its means of attachment to the lower end of pipe A. This cylinder B is inserted concentrically into a larger cylinder C, the lower end of which is covered by a plate *c*, having a series of fine apertures for letting in the atmospheric air used for feeding the flame. This last-named cylinder C forms an annular air-chamber around the central tapering cylinder B, and is fastened near its upper end, by soldering or in any other suitable manner, to the body D of the lamp proper. This body is provided with a depending flange *d*, having a series of equidistant set-screws or binding-screws E, by means of which the transparent globe F may be attached to the lamp-body, as clearly illustrated on the drawings. The lamp-body D is further provided with a series of radial air-ducts G, the inner ends of which open up into the annular air-chamber between the cylinders B and C. Thus it will be seen that air may enter the globe from the outside through these radial ducts G, the annular air-chamber between the cylinders B and C, and the apertures *c*, which surround the burner *a*, as indicated by the arrows.

The flanged cap-piece of the lamp-body D is further provided with a series of equidistant apertures H, which also form means of ingress for the outside air to the interior of the lamp, the current of air entering these apertures H being deflected in a downward direction by means of a ring or annulus I, the outside of which is concave, and which, besides serving as a deflector for the air-current entering through the apertures H, forms a hood for the flame within the globe F.

The upper part of the gas-pipe A above the top plate D′ of the lamp-body D is surrounded by a concentric tube J, the open upper end of which is provided with a concave cap or deflector-shield K. This tube J is in turn surrounded by the concentric chimney L, which forms a means of escape for the products of combustion, which find their way through the flame-chamber M, between the hood I and cylinder C, apertures O in the lamp-body, (see Fig. 2,) and up into the lower enlarged portion of the chimney L, through which the products of combustion ascend until they have escaped at the upper end of the chimney, where they are deflected outwardly into the open air by means of the concave cap or deflector K.

By reference to the drawings it will be seen that the inner cylinder B is constructed at its upper end with a screw-threaded collar, by means of which it is fastened in the annular top plate D′ of the lamp-body. This threaded collar projects above said plate and is screwed into the lower screw-threaded part of a hood or cap P, the contracted upper end of which

is provided with a series of apertures *p*, opening up into the annular space between the central gas-pipe A and its concentric tube or cylinder J. This cap or hood P is also threaded on the inner side of its upper reduced end, to adapt it to be screwed upon the upper section of pipe A.

The depending inner cylinder B below the upper plate D′ is also provided with a series of apertures *e*, through which a portion of the air which enters the air-ducts G will find its way into the inner air-chamber between the central gas-pipe and the contracted cylinder B, the air entering this annular space passing up through a series of vertical ducts or apertures *f* and into the hood or cap P, from which it escapes as hot air into the annular air-chamber formed by the cylinder J and surrounding the gas-pipe, escaping at the top of said cylinder. The upper end of this cylinder J above the cap or deflector K is provided with a circular damper Q, corresponding with a perforated disk J′, so that by rotating the damper Q the apertures through which this heated air escapes may be enlarged at will, thereby regulating the escape of hot air from the annular air-space, and thus regulating the amount of heat which is to be imparted to the central pipe A for the purpose of heating the gas.

Having thus decribed our invention, we claim and desire to secure by Letters Patent of the United States—

1. The combination, in a gas-lamp, of a depending pipe, a spherical burner, a cylinder inclosing a portion of said pipe, said cylinder being provided with a series of lateral perforations and being attached to an annular top plate, a hood attached to said top plate and said depending pipe, vertical apertures connecting said cylinder and said hood, a tube inclosing said hood, apertures connecting said hood and said tube, a lamp-body carrying a depending globe and having passages or ducts leading from the exterior into the globe and also into the larger cylinder, and means, substantially as described, by which said body is connected to said cylinder.

2. The combination, in a gas-lamp, of a depending central pipe and burner, a cylinder inclosing a portion of said pipe above said burner, whereby an annular chamber and the vertical ducts are formed between said central pipe and said cylinder, said cylinder being provided with apertures *e*, a larger cylinder inclosing the lower portion of said cylinder, whereby an annular air-passage is formed between said cylinder and said larger cylinder and having its lower end provided with an apertured plate for the entrance of the air from said annular passage, a lamp-body connected to said cylinders and provided with radial air-ducts G, apertures H, apertures O, and flame-chamber M, and having a depending globe, hood P, having apertures *p*, a tube inclosing said hood and extending upward, all constructed and arranged substantially as and for the purpose described.

3. The herein-described gas-lamp, comprising the following elements: a depending pipe and burner, a cylinder, a larger cylinder, exteriorly-concave ring, lamp-body, a depending globe, a hood, tube inclosing said hood and provided at its upper end with a perforated disk, and a damper perforated to register with the perforations of the disk, air tubes and ducts for feeding the flame and connecting the different chambers, all constructed and combined to operate in the manner described.

4. The herein-described gas-lamp, comprising the following elements: a depending pipe and burner, a cylinder, a larger cylinder, exteriorly-concave ring, lamp-body having a depending globe, a hood, tube inclosing said hood, a perforated disk and damper adapted to regulate the passage of the air in said tube, a chimney adapted to carry up the products of combustion, a deflector-shield, air ducts and passages adapted to feed the flame and connect the chamber formed by the various pipes and tubes, substantially as shown, all constructed and combined to co-operate substantially as and for the purpose set forth.

In testimony that we claim the foregoing as our own we have hereunto affixed our signatures in the presence of two witnesses.

WILHELM STERN.
JOHANN MÜCKE.

Witnesses:
GUSTAV FUDE,
B. ROI.