

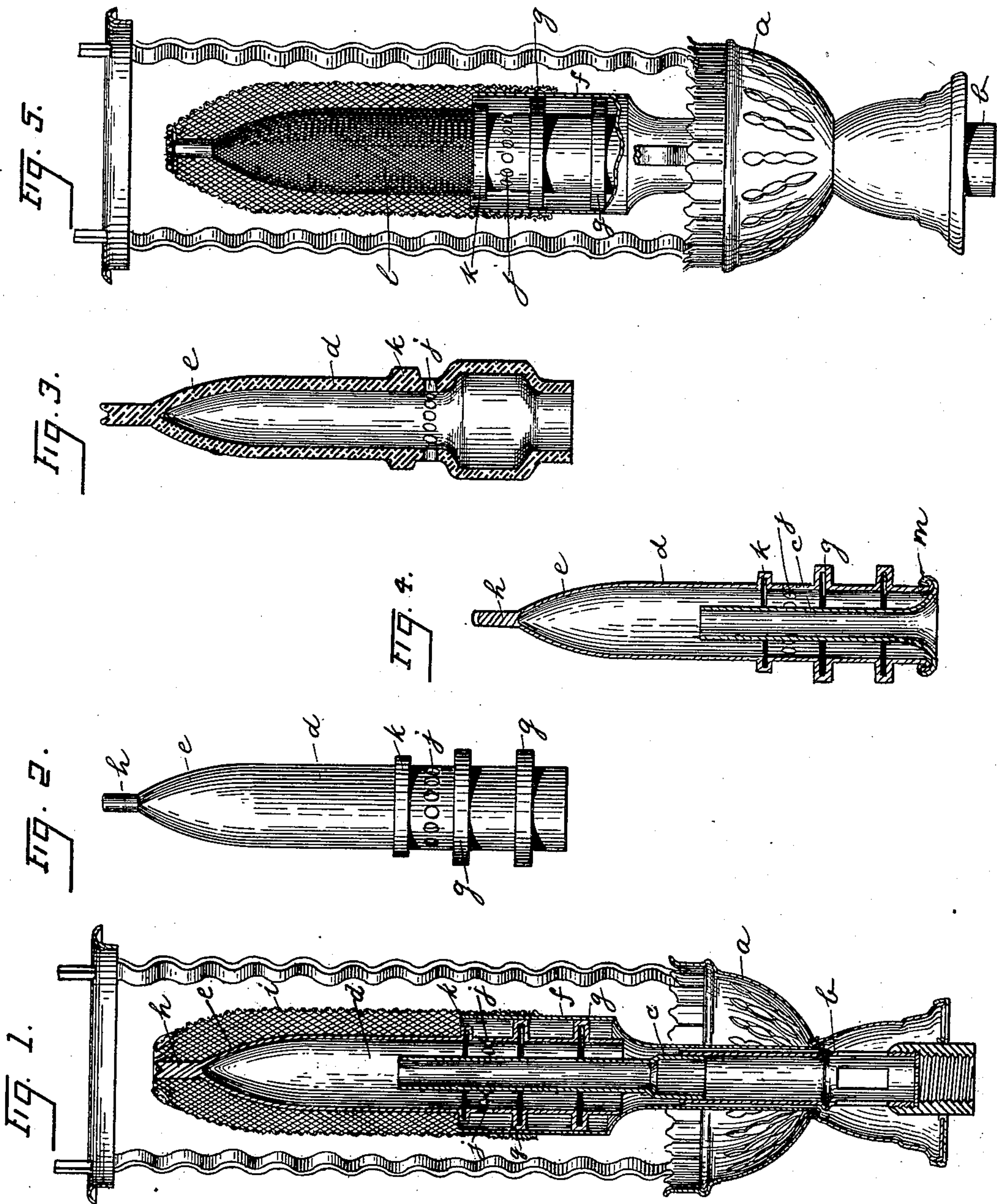
No. 669,189.

Patented Mar. 5, 1901.

A. C. SWAIN.
INCANDESCENT GAS BURNER.

(Application filed Apr. 5, 1900.)

(No Model.)



WITNESSES:
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INCANDESCENT GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 669,189, dated March 5, 1901.

Application filed April 5, 1900. Serial No. 11,727. (No model.)

To all whom it may concern:

Be it known that I, APPIUS C. SWAIN, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Incandescent Gas-Burners, of which the following is a specification.

This invention relates to improvements in incandescent gas-burners, the object of the invention being to provide a burner of this class which shall give a more powerful light in proportion to the amount of gas consumed and by the use of which the incandescent mantle will have a longer life than those at present in use.

The invention therefore resides in the novel construction, combination, and arrangement of parts for the above ends hereinafter fully specified, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical section of an incandescent light equipped with the improved burner. Fig. 2 is a side elevation of the superheating gas-chamber. Fig. 3 is a vertical section of a modified form of the same. Fig. 4 is a similar view of a further modification; and Fig. 5 is a side elevation, partly in section, of a still further modification of the invention.

Referring to the drawings, *a* represents the base or gallery of an incandescent gas-lamp centrally supported upon and around the Bunsen tube *b*. In the upper end of said tube is fitted a second tube *c*, the upper end of which leads into a superheating-chamber *d*. Said chamber or casing *d* is cylindrical for the greater part of its length, tapering or converging at its upper end, as shown at *e*. The lower end of the casing *d* rests within the cylindrical upper portion *f* of the base, commonly called the "mantle-carrier," and said lower end is maintained upright in said cylindrical portion by means of guiding-flanges *g*, formed or otherwise secured on said casing. The upper end of the casing terminates in a stem or standard *h*, preferably forked or grooved at the top to form a central support for a mantle *i*. The lower edge of the mantle surrounds the cylindrical mantle-carrier *f* in the usual manner.

The commingled air and gas passing up

through the tube *c* is discharged into the chamber *d*, where it is superheated by means of the heat of combustion of the gas on the outside of the chamber. Said superheated air and gas then pass down between the tube *c* and the inner wall of the casing *d* and out through apertures *j* in said casing, and then upward through an annular passage or outlet between the mantle-carrier *f* and an annular flange *k*, formed on the casing *d*, said flange when in proper position being located on the level of the top of the carrier *f*. It is found that by superheating the commingled air and gas before burning it at the mantle a much more intense light is produced, so that the same amount of illumination may be derived from the combustion of a much smaller quantity of illuminating-gas.

The casing *d* may be made of a metal or alloy with a high point of fusion, or, as shown in Fig. 3, it may be made of fire-clay, or the construction shown in Fig. 5 may be employed, in which there is an inner mantle *l*, of closely-knitted refractory material, fitting closely around a thin metal casing, the gas and air passing upward between said inner mantle *l* and the outer mantle *i*.

In the form of the device shown in Fig. 4 the tube *c* is fixedly secured to the casing *d*, the two parts being connected together at their base, as shown at *m*.

An important feature of the invention resides in the fact that the life of the mantle is prolonged thereby. With the construction at present in use the gas and air are discharged into the mantle directly upward along the center and have free passage through the top of the mantle. This violent rush of the gases against the top of the mantle tends to its disintegration at that point. With the present invention this defect is avoided, with a consequent lengthening of the life of the mantle.

On account of the apertures *j* in the casing being below that portion of the mantle through which the products of combustion pass and the casing being entirely closed opposite to said portion of the mantle, the casing is permitted to attain a very high temperature. The effect of this is that the commingled gas and air in the interior of the casing are very thoroughly heated and the exterior

of the casing is brought almost to a white heat.

It will be observed that the top of the tube *c* is nearer the apertures *j* than it is to the top of the casing. The object of this construction is to provide a comparatively superheated chamber in the top of the casing, so that the commingled gas and air are thoroughly superheated before being passed through the apertures *j*.

What is claimed is—

1. An incandescent gas-lamp, comprising a cylindrical mantle-carrier, a casing closed at the top and having at its lower end a guide engaging the interior of the mantle-carrier to maintain the casing upright therein, having also apertures at a point below the top of the carrier, a tube for the commingled gas and air leading into the interior of said casing, and a mantle supported at its upper end upon the top of the casing and at its lower end fitting snugly around the upper edge of the mantle-carrier, substantially as described.

2. An incandescent gas-lamp comprising a casing closed at the top, a tube for the commingled gas and air leading into the interior of said casing, a mantle supported over said casing, and means for substantially closing the lower edge of the mantle against the passage of gas and air thereunder from the interior, said casing being apertured below the

open portion of the mantle, and entirely closed opposite to said open portion, whereby said upper portion of the casing may be highly heated, substantially as described.

3. An incandescent lamp, comprising a cylindrical mantle-carrier, a casing closed at the top and having at its lower end an annular flange fitting snugly within the cylindrical mantle-carrier to maintain the casing upright therein, and having also apertures at a point below the top of the carrier, a tube for the commingled gas and air leading into the interior of said casing and a mantle supported at its upper end upon the top of the casing, substantially as described.

4. An incandescent lamp comprising a casing closed at the top but apertured in its lower portion a tube for the commingled gas and air leading into the interior of the casing, an inner mantle fitting snugly around said casing, and a second or outer mantle supported by said casing at a distance from the inner mantle, substantially as described.

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

A. C. SWAIN.

Witnesses:

FRANCIS M. WRIGHT,
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