(No Model.) 2 Sheets—Sheet 1.

A. HEALD.

APPLIANCE FOR USE WITH INCANDESCENT GAS LAMPS.

No. 423,317. Patented Mar. 11, 1890.

Fig. 4.

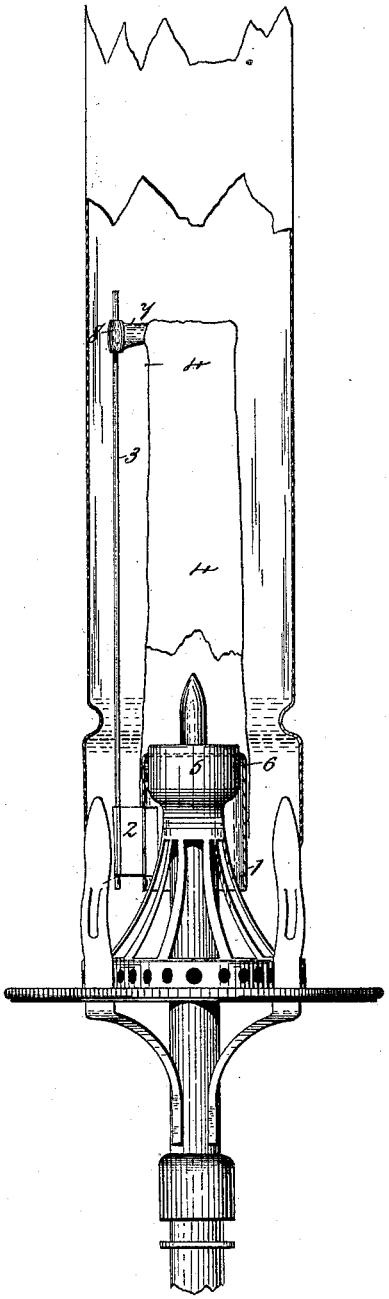


Fig. 1.

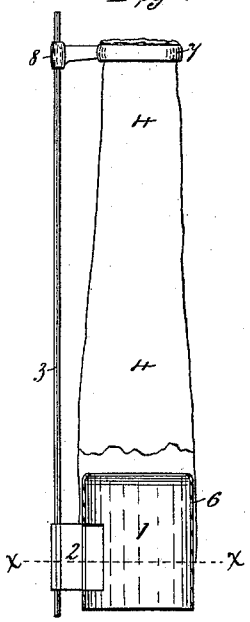


Fig. 2.

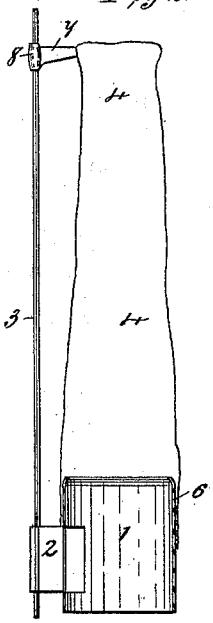


Fig. 3.

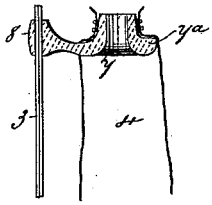
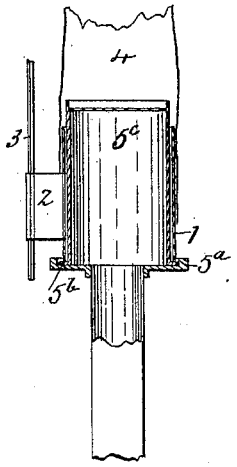


Fig. 5.



Witnesses.

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Inventor.

Arthur Heald

(No Model.) 2 Sheets—Sheet 2.

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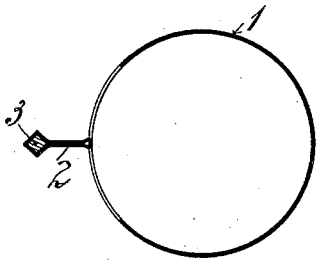
APPLIANCE FOR USE WITH INCANDESCENT GAS LAMPS.

No. 423,317. Patented Mar. 11, 1890.

Fig. 6.



Witnesses.
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UNITED STATES PATENT OFFICE.

ARTHUR HEALD, OF WESTMINSTER, ENGLAND.

APPLIANCE FOR USE WITH INCANDESCENT GAS-LAMPS.

SPECIFICATION forming part of Letters Patent No. 423,317, dated March 11, 1890.

Application filed May 1, 1889. Serial No. 309,248. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR HEALD, a subject of the Queen of Great Britain and Ireland, residing at 14 Palmer Street, in the city of Westminster, Kingdom of Great Britain and Ireland, have invented Improvements in Appliances for Use with Incandescent Gas-Lamps, of which the following is a specification.

As is well known, what are called "mantles" of certain refractory material are used with burners of gas-lamps to produce light by incandescence. Such mantles are produced by impregnating a woven cotton fabric with certain substances and afterward incinerating the mantle. Mantles so produced are extremely fragile. The usual method of forming and fixing such a mantle is as follows: The upper end of the cotton mantle before impregnation is strengthened by a piece of Brussels net sewed onto it below the top edge, the net being then turned backward over the edge of the mantle, so as to make the thickness fourfold for about three-eighths of an inch at the top of the mantle and twofold for about an inch below this. The cotton mantle is then impregnated with the lighting-fluid, and when dry a piece of fine platinum wire is threaded in and out of the strengthened hem of the cotton mantle. The top of the mantle is then drawn up by the platinum wire like the top of a bag, leaving a small hole in the center. The ends of the platinum wire are then threaded through two small holes in a ring forming part of a steel rod and fastened, and the mantle is then burned to get rid of the cotton, leaving only the skeleton composed of the earths resulting from the lighting-fluid.

In order to attach the mantle thus formed to the gallery of the lamp, the lower end of the steel rod which supports the mantle is passed through a hole in a boss attached to the lower part of the gallery and kept in position by a set-screw. Great care is required in passing the mantle over the cap of the gallery in performing this operation, lest it should be broken.

Now, my invention has for its object to obviate the disadvantages mentioned, and it relates to a novel method of supporting the incandescent material or mantle, and the construction of which is such as to admit of being readily applied to and removed from a fixed part of the lamp—such as the cap of the gallery or the top of the burner—so as to facilitate the fitting on of a new mantle of incandescent material, and at the same time to render the mantle more portable and less liable to injury in transport.

According to my invention I employ a ring, short tube, clip, or other device (hereinafter called a "tube") that is adapted to be readily applied to or removed from the top of the burner or other fixed part of the lamp. To this tube is secured a wire rod that carries a rigid support, to which the upper end of the mantle is secured in any suitable or convenient manner, as hereinafter described, the lower end of the mantle fitting loosely over the tube to the extent of, say, about half an inch.

In the accompanying sheet of drawings, Figure 1 illustrates, partly in elevation and partly in section, a mantle with means for supporting the same according to this invention. Fig. 2 is a similar view to Fig. 1, illustrating a modified method of supporting the upper end of the mantle. Fig. 3 illustrates another method of supporting the upper end of the mantle. Fig. 4 is a vertical section, partly in elevation, showing the mantle and means for supporting the same applied to the burner of a gas-lamp. Fig. 5 illustrates a modified arrangement of burner for carrying the improved appliance for supporting a mantle. Fig. 6 is a horizontal section, to an enlarged scale, on the line x x, Fig. 1.

In Figs. 1 and 4, 1 is a tube of metal or other suitable material, carrying a clip or holder 2, that is so constructed as to firmly grip the lower end of a wire rod or support 3, to which the mantle 4, formed of incandescent material, as well understood, may be suspended or otherwise attached in any convenient manner, but preferably in the manner shown in the drawings and hereinafter described. That part of the wire rod 3 embraced by the clip 2 may advantageously be made of a square, triangular, or other suitable polygonal form in cross-section, in order to prevent its turning within the clip 2, the jaws of which are formed to correspond with the form of the wire rod employed. The clip 2 may be con-

structed in various ways; but I prefer to form it of tongues or portions cut out of the adjacent part of the tube 1, as shown in Fig. 6, these tongues or portions being folded over (in the manner well known to manufacturers of thin metal work) to form the desired shape of clip.

The tube 1 is of a size adapted to be readily passed over the burner 5, Fig. 4, and rest upon the gallery, as shown. It may be made to fit the burner, in order to keep the mantle vertical by any convenient means—as, for example, by having its upper edge curved slightly inward, so as to form a lip, as at 6—the opening through the flanged part being made to correspond with the external diameter of the burner by any suitable means, such as by passing a mandrel through it; or the burner-tube may be provided, as shown in Fig. 5, with a recessed plate 5^a, carrying a vertical tubular burner 5^c of suitable material—such as steatite—that is formed with an external flange or shoulder 5^b, upon which the lower end of the tube 1 may rest, as shown.

In Figs. 1 and 4, 7 is a ring made of suitable material—such as clay—and of a size sufficiently large to allow of the cotton mantle 4 being drawn through it and leave a hole from about one-quarter to three-eighths of an inch in diameter. Attached to one side of this ring is a small boss 8, formed with a hole of a shape and size to fit tightly onto the wire rod 3. The ring 7 may be made of metal; but it is deemed advantageous to make it of refractory material—such as clay—because it will practically not then be injuriously affected by the heat of the flame from the Bunsen burner. The wire rod 3 will therefore be better able to maintain its perpendicular attitude than heretofore. In order to attach the impregnated cotton mantle 8 to this ring, it is simply cut to the right length without any sewing, passed through the ring, Fig. 1, and turned over the top thereof. The cotton mantle is then incinerated and the finished mantle remains fixed on the ring. I prefer to place the top of the mantle inside the ring and turn it outward, as in Fig. 1; but it may be placed outside and turned inward, as in Figs. 2 and 4; or the form of ring 7 (shown in Fig. 3) may be used, the top of the mantle, which in this case is slit for the passage of the arm carrying the ring, being secured to such ring by drawing it in, so as to rest, as shown, on a ledge 7^a outside the ring, which has a central hole of suitable size for the exit of products of combustion. The lower end of the mantle is fitted over the tube 1, as shown.

By my invention the time and trouble heretofore necessary to properly center the mantle over the gas-flame is obviated.

In order to change one mantle for another, all that it is necessary to do with the arrangement described is to lift the tube 1 with its attached parts carrying the mantle from the burner and to substitute another.

By my invention a box for the carriage of a mantle and the appliance for supporting it measures only four inches by one and one-fourth inch by one and one-fourth inch.

What I claim is—

1. In an appliance for use with gas-lamps to produce light by incandescence, the combination, with a tubular mantle of the kind herein referred to, of a lower support constructed to be removably attached to a part of a lamp and to carry the lower end of said mantle, a rod carried by said lower support and external to said mantle, and a ring of refractory material carried by said rod and to which the upper end of said mantle is secured, substantially as herein described.

2. In an appliance for use with gas-lamps to produce light by incandescence, the combination of a tubular support capable of being applied to and removed from a burner, a holding device carried by said tube or equivalent, a rod firmly held by said holding device, a support carried by said rod, and a mantle having its lower end fitted to said tube and its upper end directly attached to said support, substantially as herein described.

3. In an appliance for use with gas-lamps to produce light by incandescence, the combination of a tubular support 1, a clip 2, made in one piece therewith, a rod 3, carried by said clip, a ring 7, with boss 8, fitting said rod, and a mantle 4, fitted at its lower end to said tube or equivalent, and at its upper end directly attached to said ring 7, substantially as herein described, for the purposes set forth.

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

ARTHUR HEALD.

Witnesses:
W. CROSS,
EDWD. W. OCKENDEN,
Both of 46 *Lincoln's Inn Fields, London.*