No. 690,578. Patented Jan. 7, 1902.

M. D. HOOKER & W. H. BIRCHMORE.

INCANDESCENT LIGHTING DEVICE.

(Application filed Mar. 19, 1901.)

(No Model.)

Fig. 1

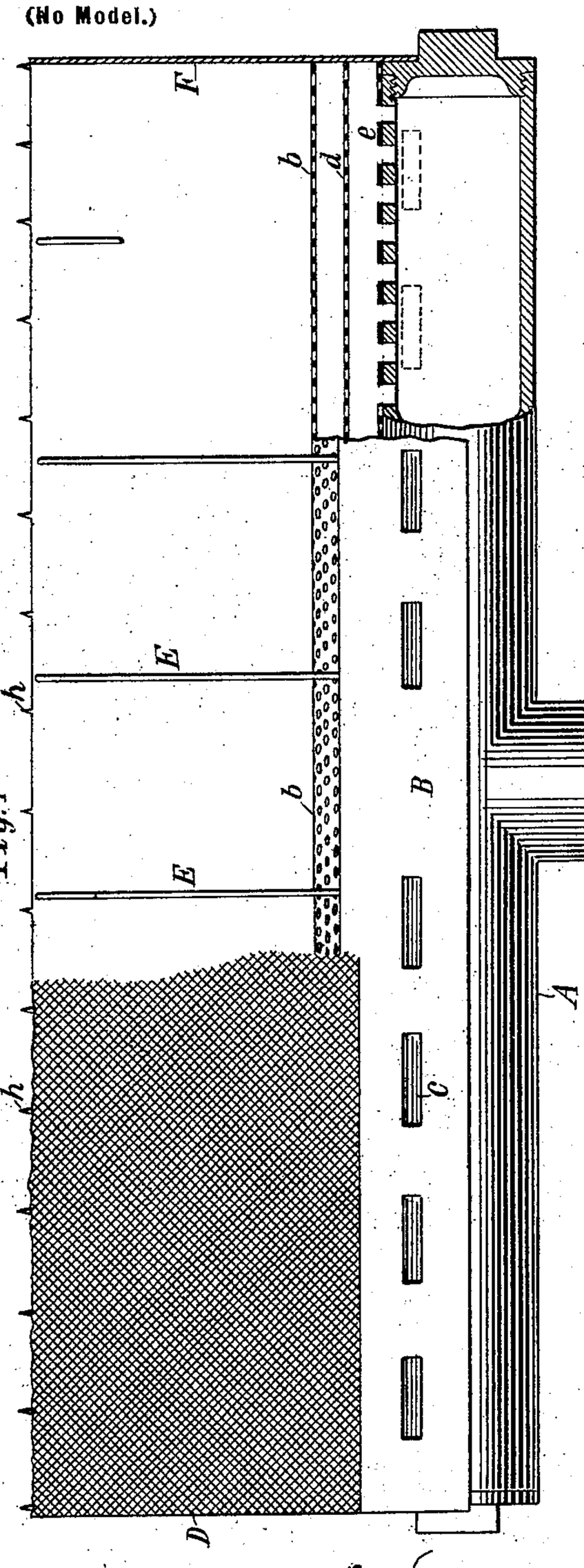

Fig. 2

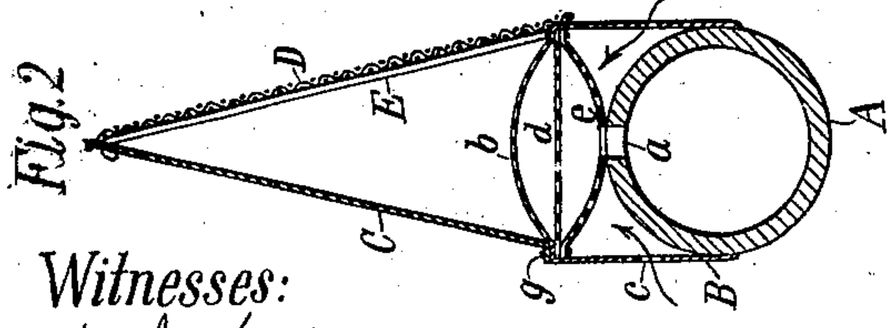

Fig. 3

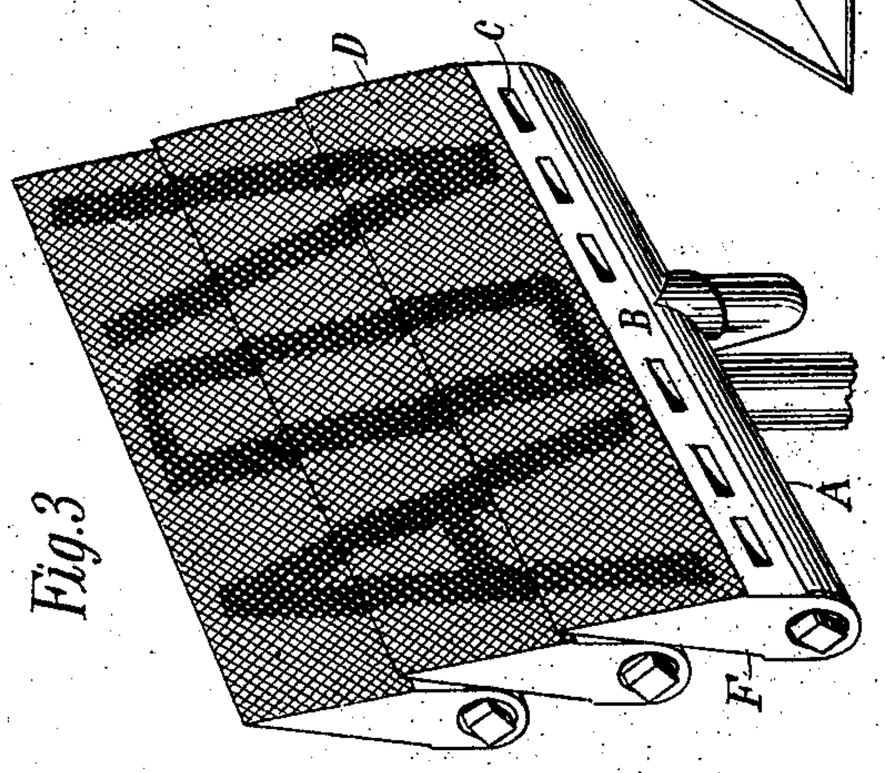

Fig. 4

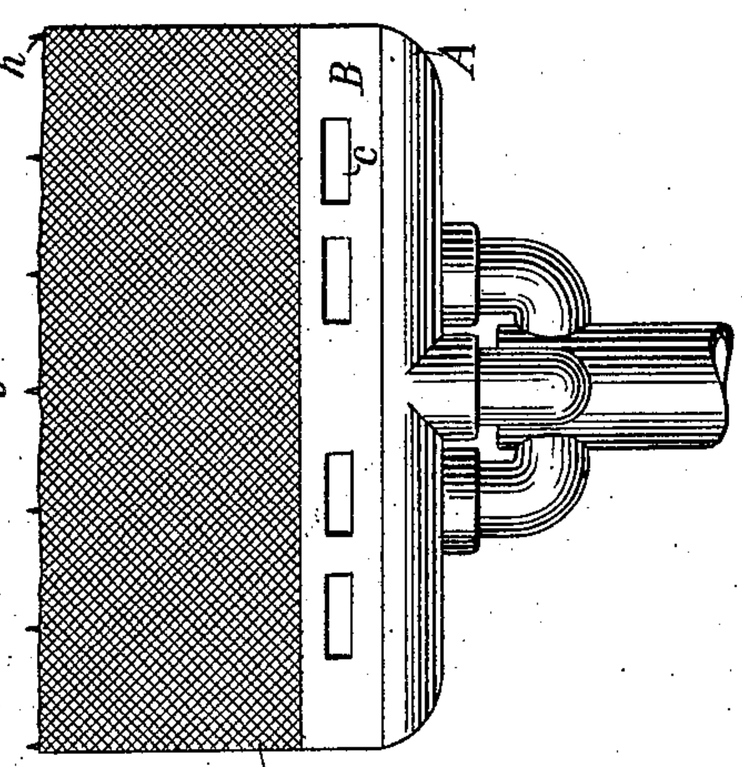

Fig. 5

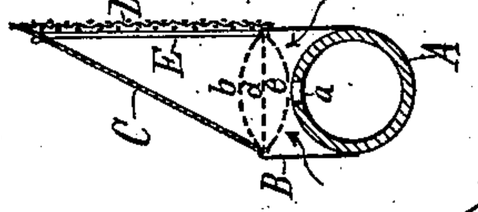

Fig. 6

Witnesses:
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UNITED STATES PATENT OFFICE.

MARY D. HOOKER AND WOODBRIDGE H. BIRCHMORE, OF BROOKLYN, NEW YORK, ASSIGNORS OF ONE-THIRD TO CLARKSON A. COLLINS, OF NEW YORK, N. Y.

INCANDESCENT LIGHTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 690,578, dated January 7, 1902.

Application filed March 19, 1901. Serial No. 51,855. (No model.)

To all whom it may concern:

Be it known that we, MARY D. HOOKER, a citizen of the United States, and WOODBRIDGE H. BIRCHMORE, a subject of the King of Great Britain, and both residents of the borough of Brooklyn, city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Incandescent Lighting Devices, of which the following is a specification.

Our invention relates to that class of illuminating devices in which the light is produced by the incandescence of a fabric of metallic-earth salts well known as "mantles." Heretofore such mantles have, in practice, been in the shape of small cones heated by an interior gas-flame, and their radius of illumination has been limited by the comparatively small surface of fabric to which, as has been supposed, they were necessarily restricted. We have found, however, that by means of suitable construction we are enabled to employ the mantle fabric in surfaces of extended size, thereby not only obtaining enormous illuminating power, but also adapting such lights to other purposes, such as advertising. To this end we form a burner-top consisting of a longitudinally-extended tent-shaped structure, one side of which is composed of a flat sheet of the incandescing fabric and the other of rigid heat-resisting material, to the upper edge of which the upper edge of the fabric is secured. Such structure may be extended to any desired length, and its height is limited only by the cohesive power of the fabric. We have found that the use of sheets at least six inches in width is perfectly practicable, and by placing a series of such tent-shaped structures one above another a practically continuous illuminating-surface of any desired height may be had. Both sides of the tent-shaped structure may be of the incandescing fabric, with a supporting-ridge; but we prefer the construction above indicated. The ends of the tent-shaped structure are closed in any suitable way, and its base is filled with the gas-burner proper. The sheets of fabric may be obtained by slitting longitudinally the cylinders in which, as is well known, such fabric is woven.

The invention will be best understood by reference to the accompanying drawings, in which—

Figure 1 shows a side view, and Fig. 2 a cross-section, of a burner embodying our invention. Fig. 3 shows a perspective of a series of such burners arranged one above another. Fig. 4 shows a side view, Fig. 5 a cross-section of one side, and Fig. 6 a plan, of a burner embodying our invention and adapted for use in street-lamps or for similar purposes.

The same letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A indicates a horizontally-disposed gas-pipe, along the upper surface of which are perforations *a* for the escape of gas. Resting upon and extending along the pipe A is a metal cap B, having a perforated top *b* and openings *c* along the sides thereof for the admission of air. Within the cap B are perforated diaphragms *d e* for producing a more perfect admixture of gas and air. The lower diaphragm *e* rests upon the pipe A and is provided with openings corresponding with the openings *a* therein. The gas-pipe, together with the cap B, forms the burner-base.

C is a sheet or plate of copper or other suitable rigid heat-resisting metal or material, which rests upon and extends along the cap B and is held in place in any suitable manner, as by rivets *g*.

The plate C forms one side of a tent-shaped structure extending along the burner-base, the other side of which is composed of a sheet D of the well-known incandescing mantle fabric. The upper edge of this is secured to hooks or projections *h* along the upper edge of the plate C, and it is supported by wires or small rods E, which at their upper ends are secured to the upper edge of the plate C and have their lower ends resting upon the opposite side of the cap B. The ends of the tent-shaped structure are closed in any suitable manner, as by caps or plates F, secured to the gas-pipe A.

Such a burner structure may be made of any desired length. The vertical dimensions of the incandescing fabric will be limited by the

strength of the material only. In order to provide for a greater vertical lighting-surface, we arrange a series of such structures one above another, as shown in Fig. 3, by which a practically continuous illuminated surface of great vertical extent may be secured. Such a surface may be advantageously employed for signs, display advertisements, or other similar purposes.

In Figs. 4, 5, and 6 of the drawings we have illustrated the application of our invention in an illuminating device having a continuous illuminating-surface or more than one lighting-face—in the present case three—such as a street-lamp. In this case sections of the burner-base are joined at the ends, so as to form a continuous burner having as many sides as it is desired the lighting device shall have. Sections of the back plate C are united in the same manner and located within the burner-base, and the sheets or a section of the woven cylinder of incandescing fabric is attached around the upper edge of the plate or plates C. In this construction the plates C are preferably given such an inclination that the fabric D will hang perpendicularly, so as to obviate gores at the corners of the fabric. In the same manner a circular or cylindrical burner may be made in accordance with our invention.

In setting up the burners the mantle fabric, suitably impregnated with metallic-earth salts in the usual well-known manner, should be put in position for use before the cotton base or woven fabric is burned out.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a lighting device, the combination of a longitudinally-extended burner-base and a burner structure thereon having one side composed of a suitably-supported sheet of rigid heat-resisting material, and the side opposite thereto of a sheet of incandescing fabric, and supports for said fabric, substantially as and for the purposes set forth.

2. In a lighting device, the combination with a burner-base of a burner structure having one side composed of a flat sheet of incandescing fabric and the side opposite thereto of a sheet of rigid heat-resisting material, substantially as and for the purposes set forth.

3. In a lighting device, the combination of a flat sheet of incandescing fabric, forming one side of an inclosed structure, means for supporting the same, and a burner arranged to apply heat thereto, substantially as and for the purposes set forth.

4. In a lighting device, the combination of a longitudinally-extended sheet of incandescing fabric, means for supporting the same, and a burner arranged to apply heat thereto, substantially as and for the purposes set forth.

5. In a lighting device, the combination of a series of longitudinally-extended gas-burners ranged one above another and a series of sheets of incandescing mantle fabric arranged to be heated by such burners and present a practically continuous lighting-surface.

6. In a lighting device the combination of a series of burner-bases connected at their ends so as to form a continuous multiple-sided burner, a suitably-supported sheet of incandescing mantle fabric disposed so as to present faces corresponding to the sides of said burner, and a series of backs of rigid, heat-resisting material located within the figure formed by said fabric and arranged to form therewith and with said burner-bases an inclosed burner structure, substantially as and for the purposes set forth.

7. In a lighting device, the combination of a continuous burner-base, a sheet of incandescing mantle fabric arranged to present a continuous lighting-surface and a back of rigid, heat-resisting material arranged to form with said base and said fabric an inclosed burner structure, substantially as and for the purposes set forth.

In testimony whereof we have hereunto subscribed our names this 18th day of March, A. D. 1901.

MARY D. HOOKER.
WOODBRIDGE H. BIRCHMORE.

Witnesses:
CLARKSON A. COLLINS,
CHAS. METZ.