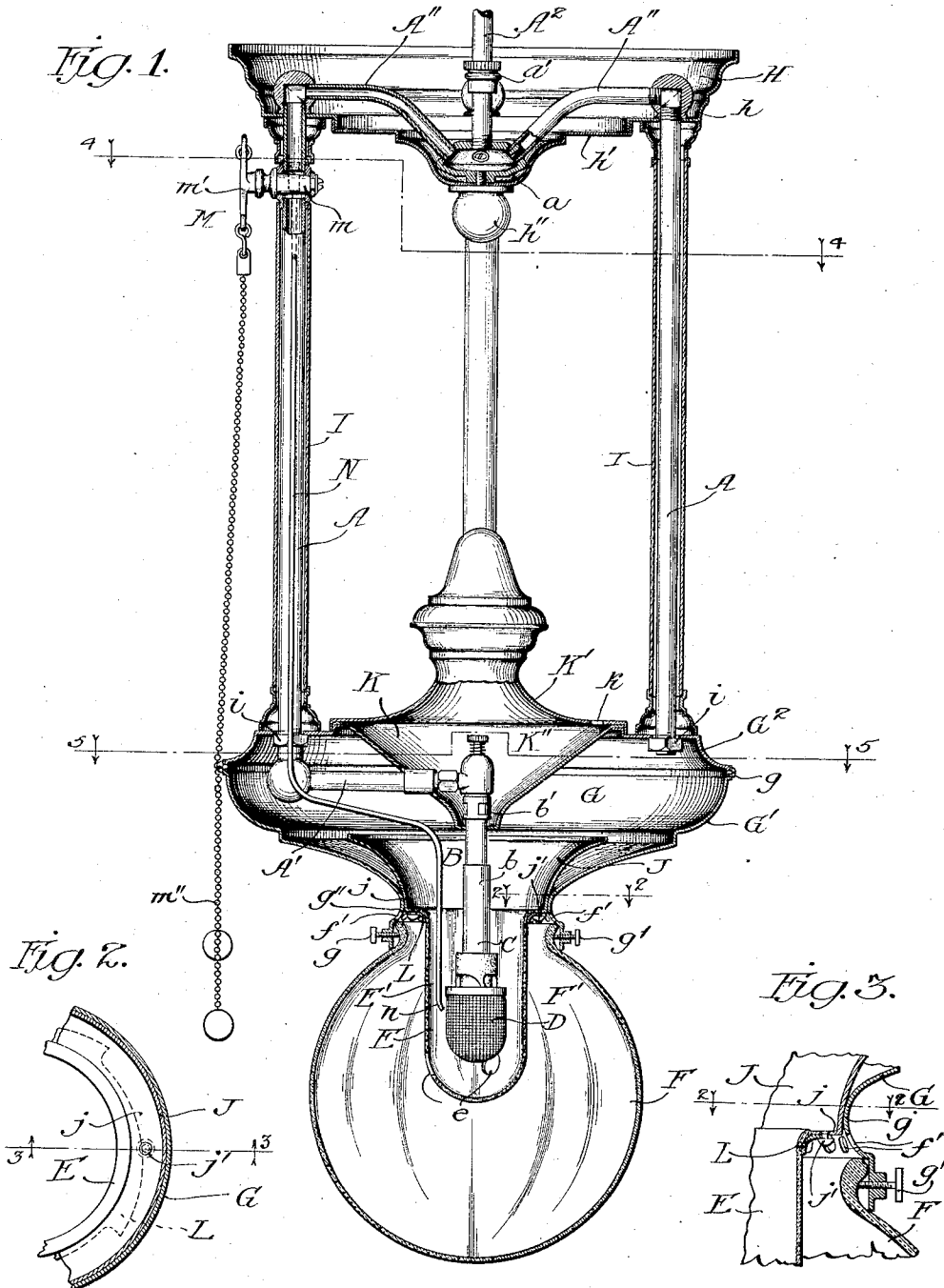


C. A. LUTHER.
CHANDELIER.
APPLICATION FILED APR. 12, 1910.

1,007,881.

Patented Nov. 7, 1911.
2 SHEETS—SHEET 1.



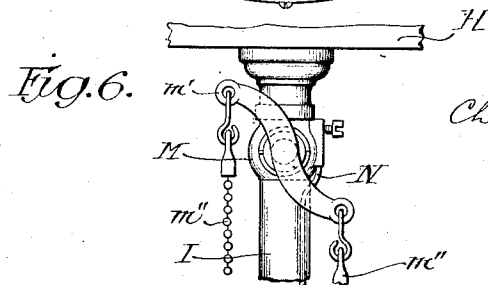
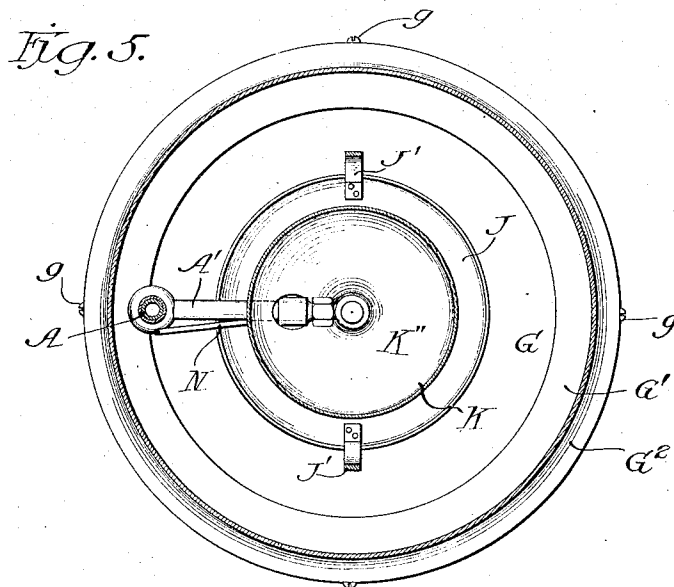
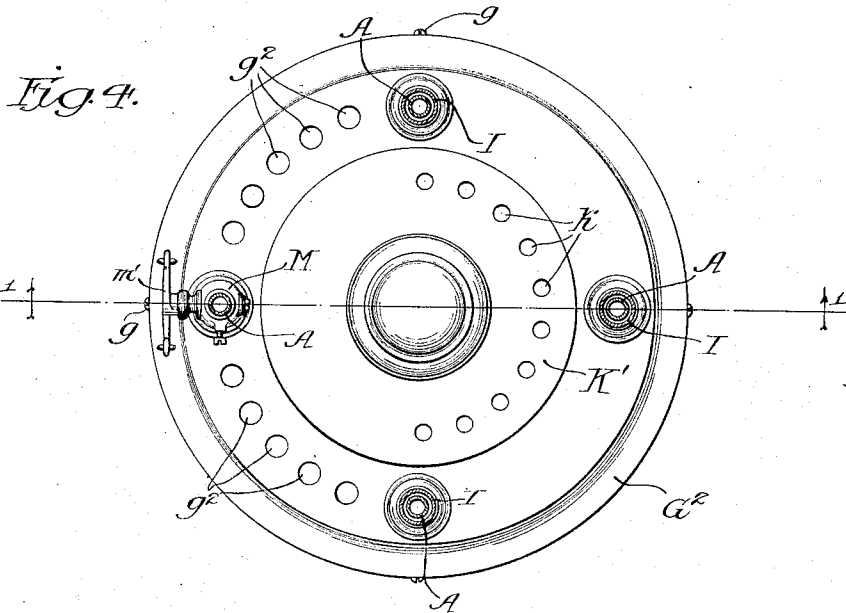
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Inventor:-
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UNITED STATES PATENT OFFICE.

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CHANDELIER.

1,007,881.

Specification of Letters Patent.

Patented Nov. 7, 1911.

Application filed April 12, 1910. Serial No. 554,905.

To all whom it may concern:

Be it known that I, CHARLES A. LUTHER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Gas-Chandeliers, of which the following is a specification.

The present invention relates to a chandelier for a gas burner of that class now extensively used for illuminating purposes, which has a burner proper of the Bunsen type provided with an incandescent mantle, and which has a combustion chamber, in which the mantle is located, provided with an inlet for air for supporting combustion and an outlet for the products of combustion; a chamber communicating with said outlet for receiving the products of combustion and itself provided with an outlet for the final escape of the products of combustion into the atmosphere; and an air chamber communicating with the air inlet of the Bunsen burner and provided with an inlet for the admission of atmospheric air.

The object of the invention is to provide a chandelier which will not only meet all of these requirements of a burner of this class but which will also have the merits of facilitating efficiency of the functional elements of the burner; of being compact and of simple construction; of affording ready access to all parts of the burner; of being neat and slightly in appearance; and of being susceptible of ornamentation to a high degree.

To these ends the invention consists in the features of novelty that are hereinafter described with reference to the accompanying drawings, which are made a part of this specification and in which:

Figure 1 is a vertical section of a lamp embodying the invention, the plane of the section being indicated by the line 1—1, Fig. 4. Figs. 2 and 3 are, a horizontal and a vertical section, enlarged, of some of the details, the sections being taken on the lines 2—2, Figs. 1 and 3, and the line 3—3, Fig. 2, respectively. Figs. 4 and 5 are horizontal sections on the lines 4—4 and 5—5, respectively, Fig. 1. Fig. 6 is an enlarged elevation of the gas valve and its accessories.

The gas, which may be of suitable nature, is conducted through pipes, A, A' to the burner proper, B, which has a jet tube, C, which discharges a swiftly moving jet of gas into a tube *b* having, above the jet, an open-

ing *b'* for the admission of air. This tube *b* is in fact a mixing chamber in which the combustible mixture of gas and air is formed but for the sake of distinction it is hereinafter called a mixing tube. The mixing tube supports, at its lower end or tip, an inverted incandescent mantle, D, which is contained in a chamber, E, herein called the combustion chamber, the walls of which are in the form of a chimney, E'. (The term "tip" as herein used is intended to mean that part of a burner from which the gas or combustible mixture is discharged to feed the flame.)

The chimney E' must be made of translucent material and when it is arranged within a translucent globe, F, it is preferably transparent, and made of glass, the globe itself being preferably made of glass which is translucent but not transparent. The globe, F, enters into the construction of the outer walls of an air chamber, F', which communicates with the combustion chamber, for the inlet of air thereto, at a level below the area of combustion, as through openings, *e*, while the upper end of the combustion chamber is entirely open and in direct communication with a chamber, G, for the free and easy escape of the waste products of combustion from the former into the latter. The chamber G, hereinafter called the "waste chamber," is constructed of a number of parts or sections some of which are common to other chambers of the burner, as hereinafter described. Its outer walls, which are visible from the outside, are preferably of ornamental design and comprise an annular, hollow, sheet metal bottom section, G', and an annular hollow sheet metal top section, G², having overlapping marginal lips or flanges which are separately secured together by screws *g*, so that the bottom section may be removed without disturbing the top section or any of the parts supported by or connected with it, and this greatly facilitates the assembling of the parts in the first instance. Again, without disturbing the bottom section, the globe may be removed in the usual way, and after removing the globe the chimney or combustion chamber may be removed to give access to the mantle.

The top section, G², is supported from above by a plurality of hangers A, depending from the outer ends of lateral arms, A'', radiating from a central hollow fitting, *a*, which, in turn, is supported by a central

hanger, A². This hanger, A², preferably consists of a pipe through which the gas is supplied to the burner proper through the fitting *a*, one of the arms A'', one of the hangers A, and the branch pipe, A'. All of the supporting arms and hangers are preferably made of pipe, and in this event where there is only one burner to be supplied all but one of them are closed up to prevent the passage of gas.

The fitting, *a*, and arms, A'', are inclosed and concealed from below by a hollow sheet metal rosette, H, of ornamental design which is supported and held against the ceiling by the hanger A². The rosette comprises a ring, *h*, and a disk, *h'*, which closes the opening of the ring. Their meeting edges have overlapping lips or flanges, forming a slip-joint, and the disk is held against the ring by a screw, *h''*, which has threaded engagement with the fitting *a*, and has an enlarged ornamental head which engages the under side of the disk, whereby the disk may be removed for giving access to the coupling, *a'*, of the hanger A². The ring, *h*, is supported by ornamental tubular sheaths, I, which surround the hangers A, and bear at their lower ends against the upper side of the top section G², of the chamber G, and nuts *i*, which bear against the under side of said top section and are turned onto the threaded lower ends of said hangers, whereby the latter support chamber G and also, through the sheaths I, the ring *h*.

The bottom section G' is contracted downward, and within it is an annular shield, J, which is supported by the bottom section through the mediums of bracket-arms, J'. This shield also is contracted downward to a given level and below this level the lower portion of the bottom section G' flares outward, as shown at *g''*, terminating at bottom in the aforesaid flange for receiving the globe-supporting thumb screws. This flaring portion, *g''*, forms a part of the outer wall of the air chamber F' and through it are openings *f'*, for admitting atmospheric air to said air chamber. The remaining part of the wall of said air chamber is formed by an inturned flange, *j*, at the lower end of the shield, J, which fits, singly, the contracted portion of the bottom section, G', and this portion *j*, of the wall of the air chamber F' is common to said air chamber and the waste chamber, G. The products of combustion escape from the chamber G through a semi-circular series of openings, *g*², formed through the top section G², so that, escaping into the atmosphere at a level above the level of the inlet openings, *f'*, of the air chamber F', and having a tendency to rise, as they do, the products of combustion can not possibly reach and contaminate the air entering the air chamber.

The opening through the top section, G²,

is closed by a removable frusto-conical diaphragm, K, which is dished or tapers downward and completes the top wall of the chamber G and at the same time forms the bottom and sides of the air chamber K''. Its truncated lower end is provided with an opening through which the burner proper, B, passes and its flaring side is provided with an opening through which the pipe A', passes. Its top terminates in an outwardly presented flange which rests upon an up-turned flange of the top section, G², and both are embraced by a down-turned marginal flange on a removable cover, K', which is hollow and of dome-shape. The diaphragm, K, and cover K', together form an air chamber, K'', which communicates with the atmosphere through a semi-circular series of openings, *h*, located diametrically opposite the semi-circular series of openings, *g*², for the admission of air and also communicates, through the openings, *b'*, with a mixing tube, *b* of the burner proper, B, for the admission of air thereto. These air inlet openings *h*, also are remote from the outlet openings, *g*², so that there is no chance for the ascending products of combustion to reach and contaminate the air entering the air chamber, K''. The diaphragm, K, constitutes a wall which is common to the air chamber K'' and the waste chamber, G, so that while the air and products of combustion are kept entirely separate and prevented from commingling, the air in the chamber K'' is nevertheless heated before entering the mixing chamber. In like manner the walls of the mixing tube are common to the waste chamber and the combustion chamber, so that while the combustible mixture in the mixing tube is kept free from contamination by the products of combustion, it is nevertheless highly heated therein before reaching the jet.

The upper end of the chimney E', flares outwardly and rests upon and is nonrotatively secured by cement, or other means, to a correspondingly flaring ring, L, the outer edge of which is cut away or notched for permitting the outturned portion of the ring, L, to pass the enlarged heads of a series of studs, *j'*, which project downward from the flange *j*, so that when the studs are opposite the notches the ring may be moved toward or away from the flange. When the ring and flange are in contact, by rotating the chimney in one direction or the other the ring and flange may be engaged or disengaged after the manner of a bayonet joint, the inclined surfaces resulting from the notches acting as cams for engaging the necks of the studs and firmly holding them together by frictional contact.

The valve, M, for controlling the flow of gas to the burner proper is preferably located high up in the pipe A, near the ro-

sette H, and the stem of its plug *m* carries a cross arm *m'* from the ends of which pull chains *m''*, depend to within easy reach.

The tube N, for supplying gas for the pilot flame communicates at its upper end directly with the gas pipe A, ahead of the valve M, whence it extends downward through the sheath I, through the chamber G and into the combustion chamber, its lower end terminating, at *n*, in proximity to the inverted mantle D.

Thus, it will be seen, the air chamber for supplying the burner with air, or, at any rate, the principal or active portion of it, is located concentrically within the waste chamber, the cap-disk being given the dome-shape partly for convenience in handling it and partly for the sake of appearance, so that while the waste chamber is of considerable diameter, it is comparatively shallow. This permits of its being made symmetrical, shapely and ornate, which is a desideratum in the modern art of illuminating. It will also be seen that all of the several chambers are co-axially located, and this also contributes to these ends as well as to compactness, simplicity in the shape of the parts and facility in assembling them.

What I claim as new and desire to secure by Letters Patent is:

1. The combination with a gas burner having a mixing tube provided with an air inlet-opening and a tip, of a chandelier having a combustion chamber in which the tip is located, a waste chamber located above and co-axially with relation to the combustion chamber, said chambers having internal communication with each other, an air chamber located concentrically within the waste chamber and communicating with the air inlet of the mixing tube, and hangers supporting the waste chamber, said air chamber having at top a removable cap perforated for the admission of air.

2. The combination with a gas burner having a mixing tube provided with an air inlet-opening and a tip, of a chandelier having a combustion chamber in which the tip is located, a waste chamber located above and co-axially with relation to the combustion chamber, said chambers being in internal communication with each other, an air chamber located concentrically within the waste chamber and communicating with the air inlet of the mixing tube, and hangers directly supporting the waste chamber, said air chamber having at top a dome-shaped cap perforated for the admission of air.

3. The combination with a gas burner having a mixing tube provided with an air inlet-opening and a tip, of a chandelier having a combustion chamber in which the tip is located, a waste chamber located above and co-axially with relation to the combustion

chamber, said chambers being in internal communication with each other, said waste chamber being made of a bottom section and a top section secured together, said top section comprising an annular part and a dished diaphragm closing the central opening of said annular part, an air chamber located centrally within the waste chamber, said air chamber being made in part of said dished diaphragm and in part of a removable cap closing the top of said dished diaphragm, said air chamber being in communication with the air inlet opening of the mixing tube and supported by the waste chamber.

4. The combination with a gas burner having a mixing tube provided with an air inlet-opening and a tip, of a chandelier having a combustion chamber in which the tip is located, a waste chamber located above and co-axially with relation to the combustion chamber, said chambers being in internal communication with each other, said waste chamber being made in part of a bottom section and a top section separably united, said top section comprising an annular part and a dished diaphragm closing the central opening of said annular part, a perforated cap closing the top of said dished diaphragm and forming therewith an air chamber which communicates with the air inlet opening of the mixing tube, and hangers secured directly to the annular part of the top section of the waste chamber.

5. The combination with a gas burner having a mixing tube provided with an air inlet-opening and a tip, of a chandelier having a combustion chamber in which the tip is located, a waste chamber located above and co-axially with relation to the combustion chamber, said chambers being in internal communication with each other, said waste chamber being made of a bottom section and a top section separably united, said top section comprising an annular part and a dished diaphragm closing the central opening of said annular part, a perforated cap closing the top of said dished diaphragm and forming therewith an air chamber which communicates with the air inlet of the mixing tube and hangers supported at their upper ends and at their lower ends passing through openings in the annular part of the top section of the waste chamber and provided below said annular part with means engaging the under side thereof for supporting it.

6. The combination with a gas burner having a mixing tube provided with an air inlet-opening and a tip, of a chandelier having a combustion chamber in which the tip is located, a waste chamber located above and co-axially with relation to the combustion chamber, said chambers being in internal communication with each other, said

waste chamber being made of a bottom section and a top section separably united, said top section comprising an annular part and a dished diaphragm closing the central opening of said annular part, a perforated cap closing the top of said dished diaphragm and forming therewith an air chamber which communicates with the air inlet of the mixing tube, and hangers supported at their upper ends and at their lower ends passing through openings in said annular part and provided on the under side thereof with nuts, tubular sheaths surrounding the hangers and bearing at their lower ends upon the said annular part and means against which the upper ends of said sheaths bear, whereby by tightening the nuts the separate parts are securely clamped together.

7. A chandelier for gas burners of the Bunsen type having a waste chamber, said chamber being made of top and bottom sections, separably united, hangers the lower ends of which pass through openings in the top section of the waste chamber, nuts turned on to said hangers below said top section, means engaging the upper ends of the hangers for supporting them, tubular sheaths surrounding the hangers and bearing at their lower ends upon the top of said top section, and a rosette bearing upon the upper ends of said sheaths and adapted to bear against the ceiling, whereby by tightening the nuts the rosette is forced against the ceiling and the several parts securely clamped together.

8. A chandelier for gas burners of the Bunsen type having a waste chamber, a plurality of hangers secured at their lower ends to said waste chamber, a centrally located hanger having laterally branching arms to which the upper ends of the aforesaid plurality of hangers are secured, said central hanger, one of the lateral arms and one of the plurality of hangers being hollow, a pipe adapted to connect the last named hollow hanger to the burner, tubular sheaths one surrounding each of the aforesaid plurality of hangers bearing at their lower ends against the waste chamber, means against which the upper ends of said sheaths bear, and means for clamping the sheaths between the parts with which their ends are in contact.

9. A chandelier for gas burners of the Bunsen type having a waste chamber, a plurality of hangers secured at their lower ends to the waste chamber for supporting it, means engaging the upper ends of the hangers for supporting them, tubular sheaths surrounding said hangers and bearing at their lower ends against the waste chamber and a rosette adapted to engage the ceiling and conceal the means for supporting the hangers, said rosette consisting of a ring bearing upon the upper ends of the sheaths and a removable disk closing the opening of the ring.

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