

No. 802,986.

PATENTED OCT. 31, 1905.

A. J. HOFMANN.  
INCANDESCENT GAS LAMP.  
APPLICATION FILED MAR. 11, 1905.

FIG. 1

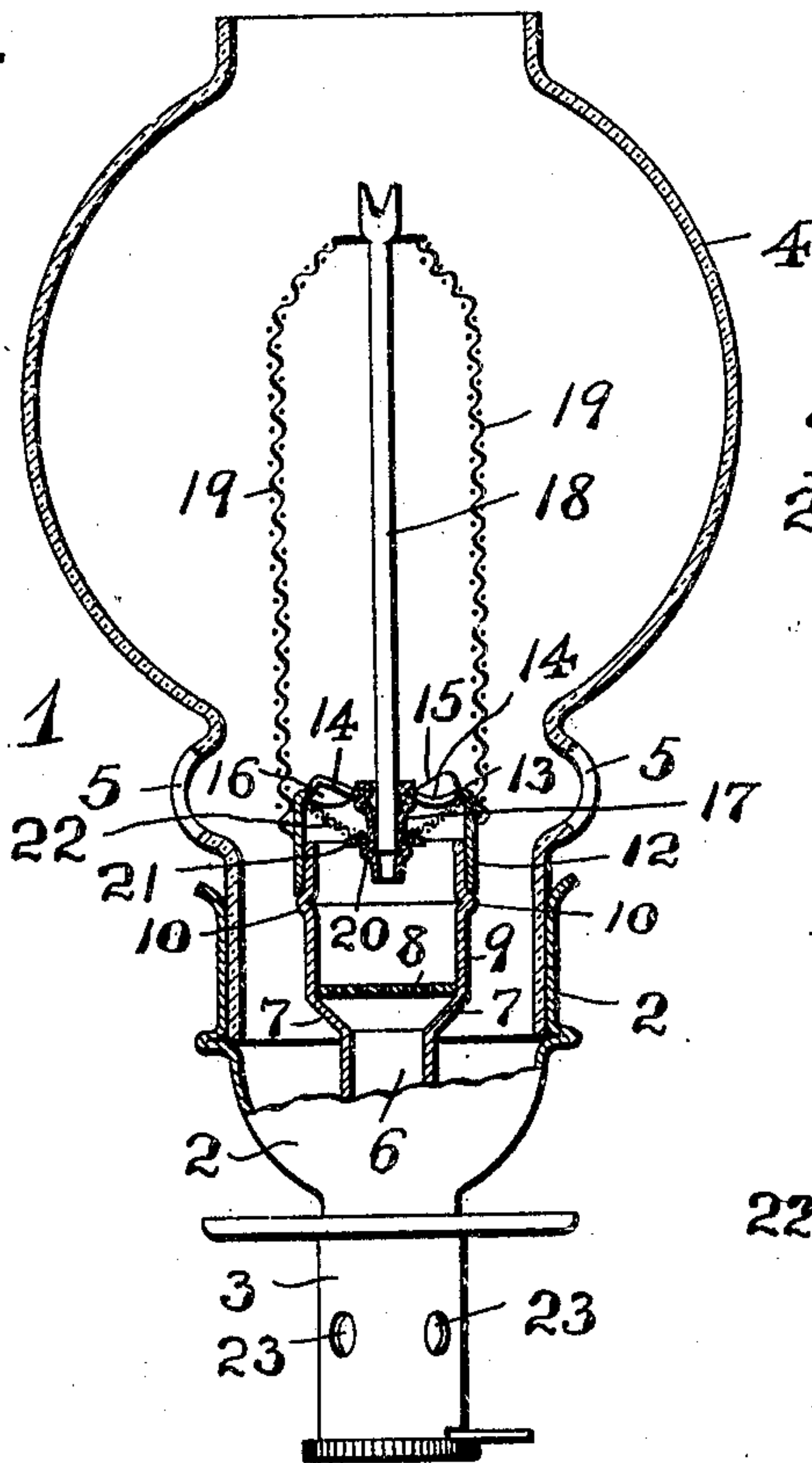


FIG. 2

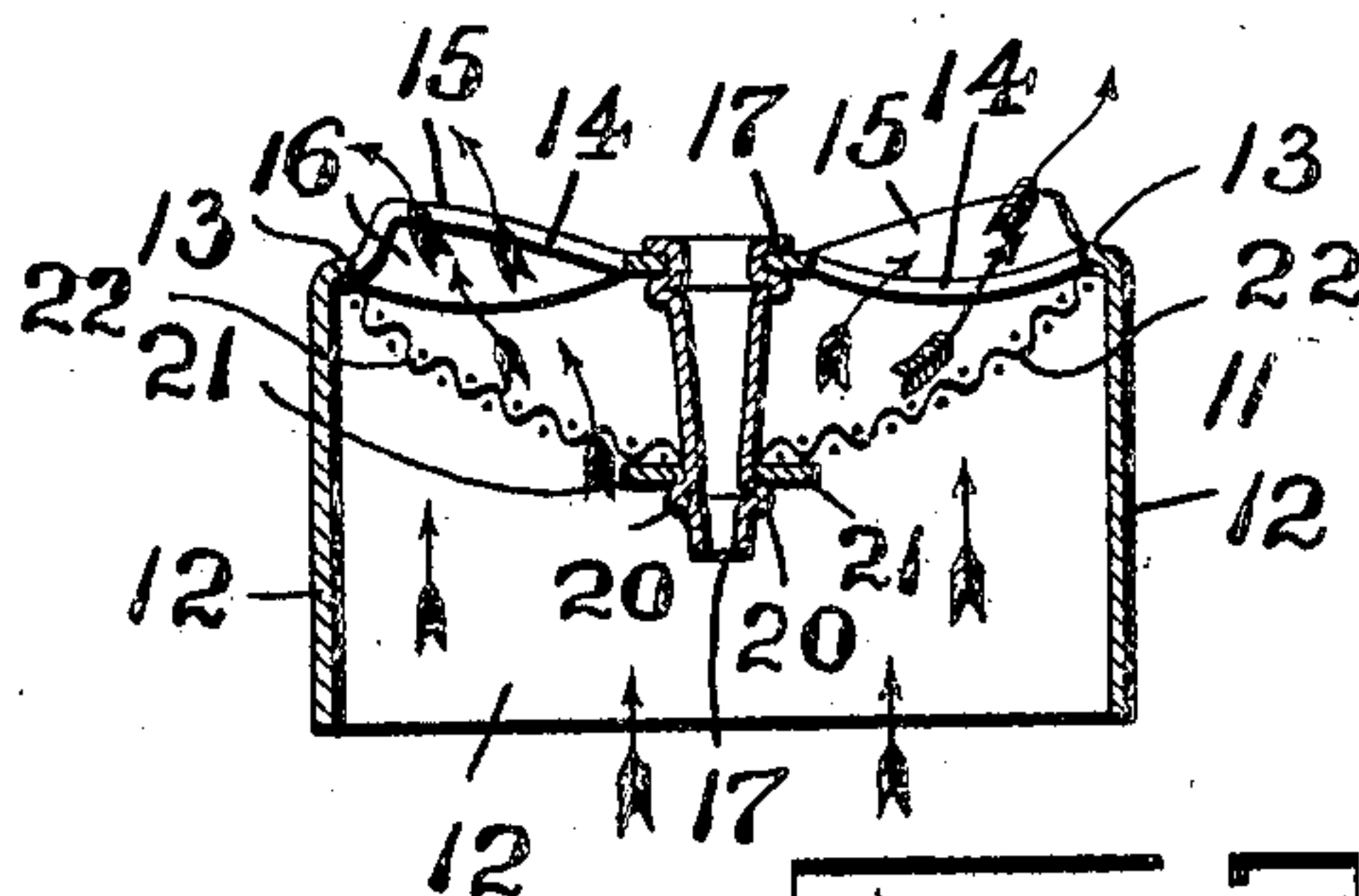
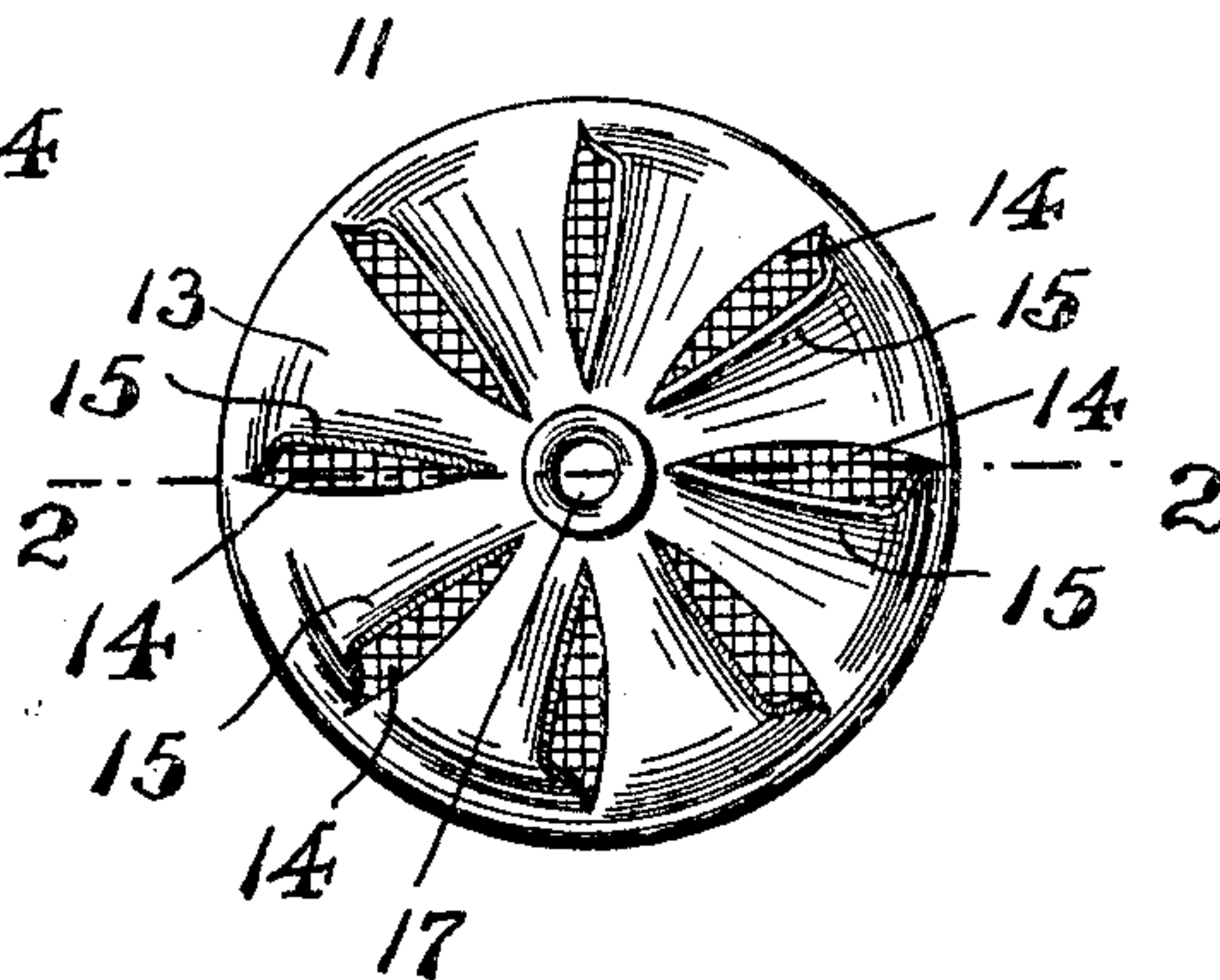
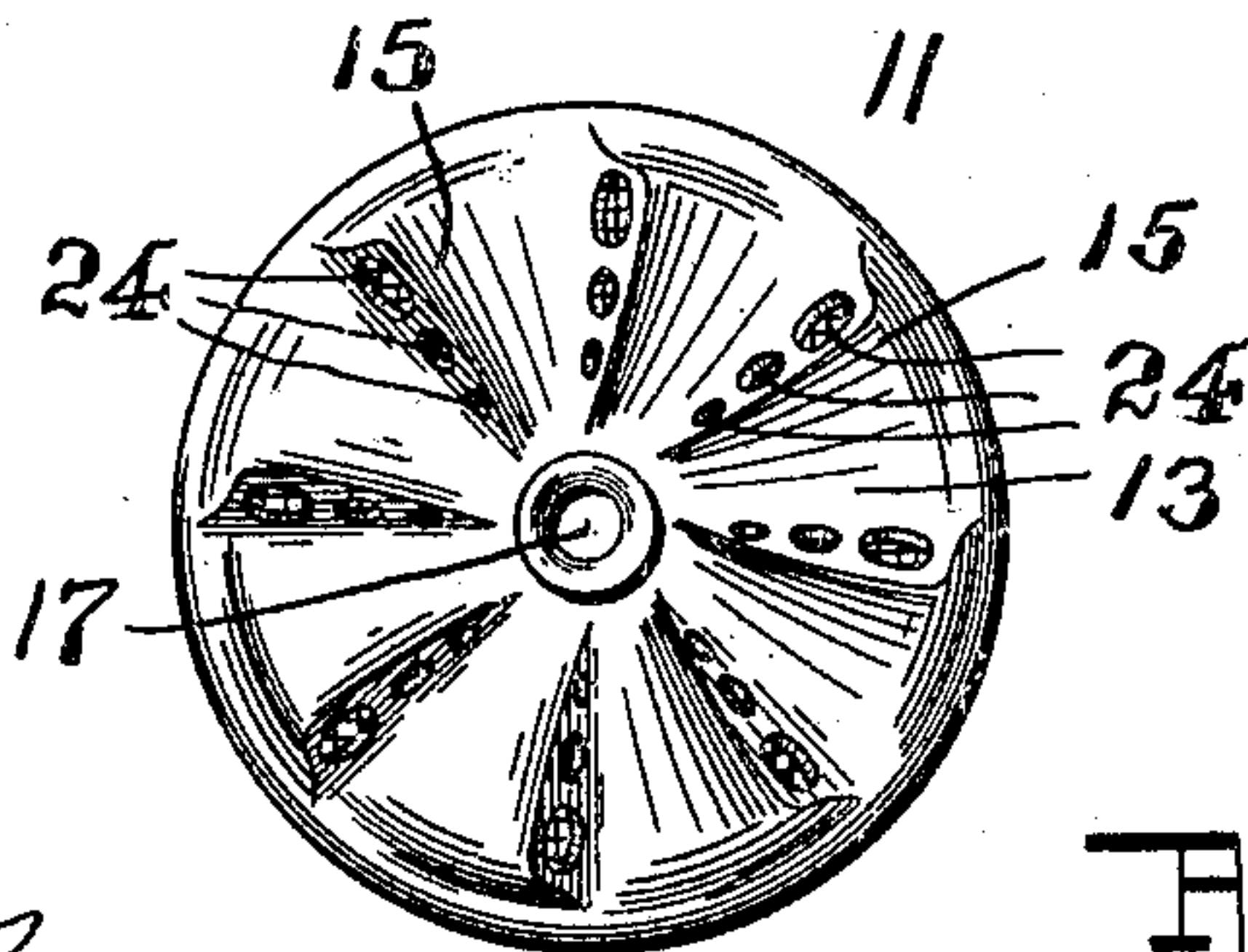


FIG. 3

FIG. 4



WITNESSES

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# UNITED STATES PATENT OFFICE.

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## INCANDESCENT GAS-LAMP.

No. 802,986.

Specification of Letters Patent.

Patented Oct. 31, 1905.

Application filed March 11, 1905. Serial No. 249,537.

*To all whom it may concern:*

Be it known that I, ADAM J. HOFMANN, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Incandescent Gas-Lamps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to numerals of reference marked thereon, which form a part of this specification.

This invention has reference to improvements in that class of gas lamps and burners known in the art as "incandescent" gas-lamps; and the invention relates more particularly to a novel means to be used with incandescent gas lamps and burners of the character hereinafter more particularly specified, which produces a swirling motion of the gas within and around the incandescent mantle of the lamp, causing the gas to burn upon the inner cylindrical surface of the mantle instead of upon the gas-sieve employed with incandescent gas-lamps.

My invention has for its principal objects to provide, in connection with the main parts of an incandescent gas-lamp, a novel gas-distributor, swirl-plate, or cap for the purpose of whirling the gas around the cylindrical surface of the incandescent mantle, practically forming an eddy with a vertical draft-passage therein, whereby a bright and strong light is produced and, furthermore, resulting in the removal of the burning gas directly from contact with the gas-breaking sieve employed with incandescent gas-lamps, and consequently protecting the said sieve and the swirl-plate or cap from the burning gas to render the said sieve and cap almost indestructible.

A further object of this invention is to provide a novel support for the mantle-rod, preferably in the form of a tapered tube which is open at both ends and in which the lower end portion of the mantle-rod is fixed, all being of such a construction that in case the mantle-rod, which is made from easily-breakable materials, such as the rare-earth oxids, breaks off the broken-off portion of said rod can be easily forced from the said tube.

The invention has for its further objects cheapness of construction, ease of manipulation in assembling the parts, and such other novel arrangements and combinations of de-

vices and parts whereby an efficient and effectively-operating incandescent gas-lamp is the final result.

Other objects of this invention not at this time more particularly mentioned will be evident from the following detailed description of my present invention.

My present invention consists, therefore, in the novel incandescent gas lamp and burner hereinafter more fully specified; and, furthermore, this invention consists in the several arrangements and combinations of devices and parts, as well as in the details of the construction of the same, all of which will be hereinafter more fully specified and then finally embodied in the clauses of the claim which are appended to and which form an essential part of this specification.

The invention is clearly illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional representation of an incandescent gas-lamp and the attachment which embodies the novel features of this invention, the lower end portion of the lamp being represented in elevation. Fig. 2 is a top or plan view of my novel form of gas-distributor, swirl-plate, or cap, the same being represented as made upon an enlarged scale; and Fig. 3 is a transverse section of the same, said section being taken on line 2 2 in said Fig. 2. Fig. 4 is a top or plan view of a modified form of gas-distributor, swirl-plate, or cap, but still embodying the principles of my present invention.

Similar characters of reference are employed in all of the said above-described views to indicate corresponding parts.

Referring now to the said drawings, the reference character 1 indicates one of the usual forms of incandescent gas-lamps, comprising the usual socket 2 and neck 3 for attachment upon the end of a gas-pipe. Arranged within the said receiving-socket 2 is the lower end of a glass globe or bulb 4, the latter being preferably provided with suitably-disposed air-holes 5, substantially as illustrated in Fig. 1 of the drawings. Within the said neck 3 and socket 2 and concentric therewith is a centrally-disposed gas-duct 6, the duct 6 being preferably expanded, as at 7, and having an enlarged and cup-shaped end or member 9, provided with an open top and a perforated plate 8, substantially as shown. The said enlarged or cup-shaped end or member 9 is provided with an annular bead 10, forming a suitable seat or rest for the pur-



poses to be presently set forth. Fitted upon this enlarged or cup-shaped end or member 9 by being slipped in position thereon and having its lower marginal edge resting upon the said seat or rest is a gas-distributor, cap, or swirl-plate 11. This gas-distributor, swirl-plate, or cap 11, which may be made of metal or any other suitable material, such as the oxides of the rare earths or the like, is preferably of the general configuration illustrated in Figs. 2 and 3 of the drawings, the same comprising a cylindrical body 12, having its lower end open and formed with a top 13. The said top 13 is provided with any suitable number of radially-disposed openings or slits 14, preferably of the marginal configuration shown in Fig. 2 of the drawings, the body portions 15 of the top which are contiguous to the one marginal edge of each opening or slit 14 extending upwardly and outwardly by being pressed or forced from the body of the top or otherwise formed with the said body by being cast or molded therein, as may be desired. These upwardly and outwardly extending portions, as will be clearly evident, provide the said gas-distributor, swirl-plate, or cap 11 upon the inner surface of its top 13 with gas-deflecting surfaces 16, from which the gas is deflected into the openings or slits 14 upon the outer curved surfaces formed by the said outwardly and upwardly extending body portions 15, with the result that the escaping gas will pass from the cap or distributor 11 with a swirling motion and forming practically a hollow cylinder of gas. The said top 13 is provided with a central hole or opening in which is suitably secured, preferably in the manner shown, a downwardly-extending tubular support 17, open at its two ends and its interior tube portion being made with a taper having its smallest part at the lowest point of the support, as will be clearly evident from an inspection of Fig. 3 of the drawings. The purpose of this tapering tube 17 is to provide a central support for a mantle rod or post 18, which holds the usual mantle 19. The said mantle 19 is arranged in such a manner that its lower end surrounds the top portion of the gas-distributor, swirl-plate, or cap 11 in the manner represented in Fig. 1 of the drawings, and the eddy or hollow cylinder of gas will whirl all around the mantle, where the gas will burn, when ignited, with the best and most efficient results. The mantle-rod 18 being also made from the rare-earth oxides, it will be evident that should it become broken by accident and the broken part remain in the tubular support 17 by removing the cap 11 an instrument or the like can be inserted in the lower open end of the said support 17 and the broken portion of the rod 18 readily removed. The cap 11 can then again be readily replaced in its position upon the cup-shaped end or member 9 for the reception of another mantle-rod. Near its lower end the said tu-

bular support 17 may be provided with an annular shoulder 20 and a supporting washer or disk 21, a cup-shaped screen or sieve 22 being arranged within the said cap 11 and held in place by means of said supporting washer or disk 21, as illustrated. This screen or sieve, which is made of metal and is usual in constructions of incandescent gas-lamps, is for the purposes of breaking up the gas which has been mixed with the air coming through the inlets 23 in the neck of the burner.

In lieu of providing the gas-distributor, swirl-plate, or cap 11 with radial slits or openings 14 the distributor or cap 11 may be made with series of radially-disposed holes or perforations 24, as shown in the modification represented in said Fig. 4 of the drawings, the holes or perforations 24 in each series varying in size, those nearest the center of the cap being smallest in size and the holes increasing gradually in size toward the outer edge of the said swirl-plate or cap. In all other respects the construction of the said gas-distributor, swirl-plate, or cap and its action in distributing the gas in a swirling motion upon and around the cylindrical surface of the mantle is the same as that described hereinabove and need not, therefore, be further dwelt upon here.

From the foregoing description of my present invention it will be clearly understood that I have devised a cheaply-constructed and efficiently-operating device for preventing the burning of the gas directly upon the sieve or screen, and, furthermore, I have provided a means for distributing the gas immediately upon and around the cylindrical surface of the mantle, upon which it burns with greatly-increased incandescence, a direct draft-passage being maintained directly within the cylindrical and hollow column formed by the swirling gas.

Of course I am aware that some changes may be made in the general arrangements and combinations of the devices and parts without departing from the scope of my present invention. Hence I do not limit my invention to the exact arrangements and combinations of the devices and parts as described in the foregoing specification and as illustrated in the accompanying drawings; nor do I confine myself to the exact details of the construction of any of the said parts.

Having thus described my invention, what I claim is—

1. The herein-described gas-distributor consisting of a cup-shaped body open at the bottom and provided with a closed top having gas-distributing openings, said top being also provided with a centrally-disposed opening, a mantle-rod support provided with a tapering tubular portion, said rod-support being arranged in the said central opening and having its upper end secured to the portions of said top which surround said central opening,



so that said rod-support extends downwardly into the hollow body of the gas-distributor, an annular shoulder surrounding the lower portion of said rod-support, and an upwardly-concaved sieve in the hollow body of said gas-distributor, said sieve being supported by the said annular shoulder and having its outer marginal edge in engagement with the angular portion formed by the inner surfaces of the cylindrical side and the top of the gas-distributor, substantially as and for the purposes set forth.

2. The herein-described gas-distributor consisting of a cup-shaped body open at the bottom and provided with a closed top having gas-distributing openings, said openings being radially disposed, and said openings being narrowest near the center of the top and widening out toward the outer portion of the top, a gas-deflecting portion contiguous to each opening for producing a swirling motion of the gas in outward directions, said top being also provided with a centrally-disposed opening, a mantle-rod support provided with

a tapering tubular portion, said rod-support being arranged in the central opening and having its upper end secured to the portions of said top which surround said central opening, so that said rod-support extends downwardly into the hollow body of the gas-distributor, an annular shoulder surrounding the lower portion of said rod-support, and an upwardly-concaved sieve in the hollow body of said gas-distributor, said sieve being supported by the said annular shoulder and having its outer marginal edge in engagement with the angular portion formed by the inner surfaces of the cylindrical side and the top of the gas-distributor, substantially as and for the purposes set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 9th day of March, 1905.

ADAM J. HOFMANN.

Witnesses:

FREDK. C. FRAENTZEL,  
GEO. D. RICHARDS.