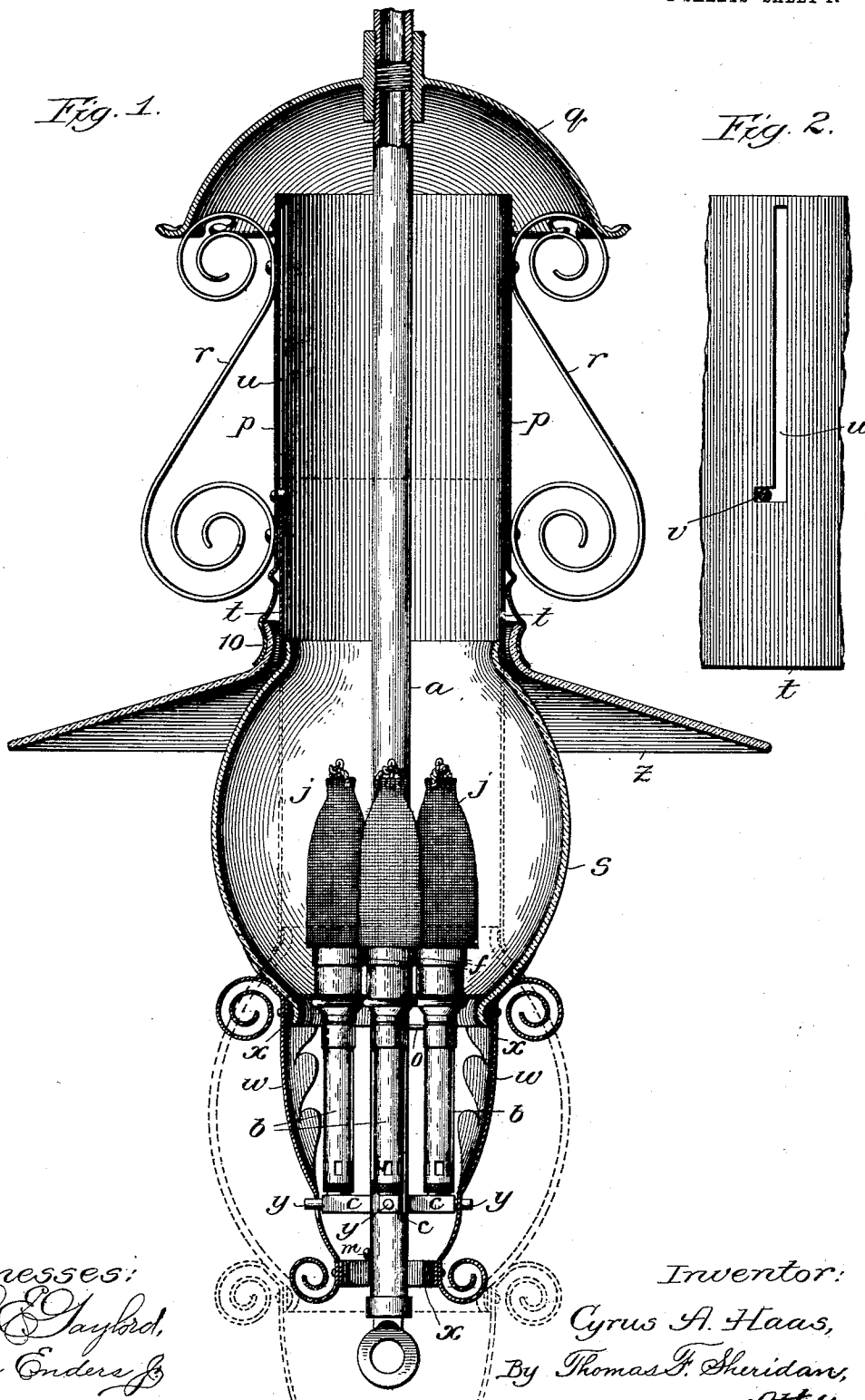


C. A. HAAS.
INCANDESCENT GAS LAMP.
APPLICATION FILED JUNE 14, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

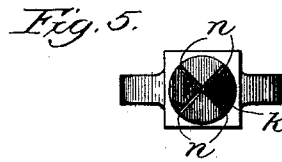
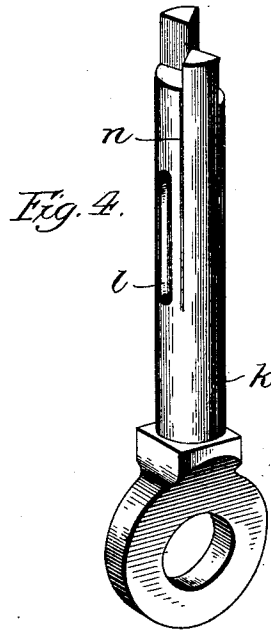
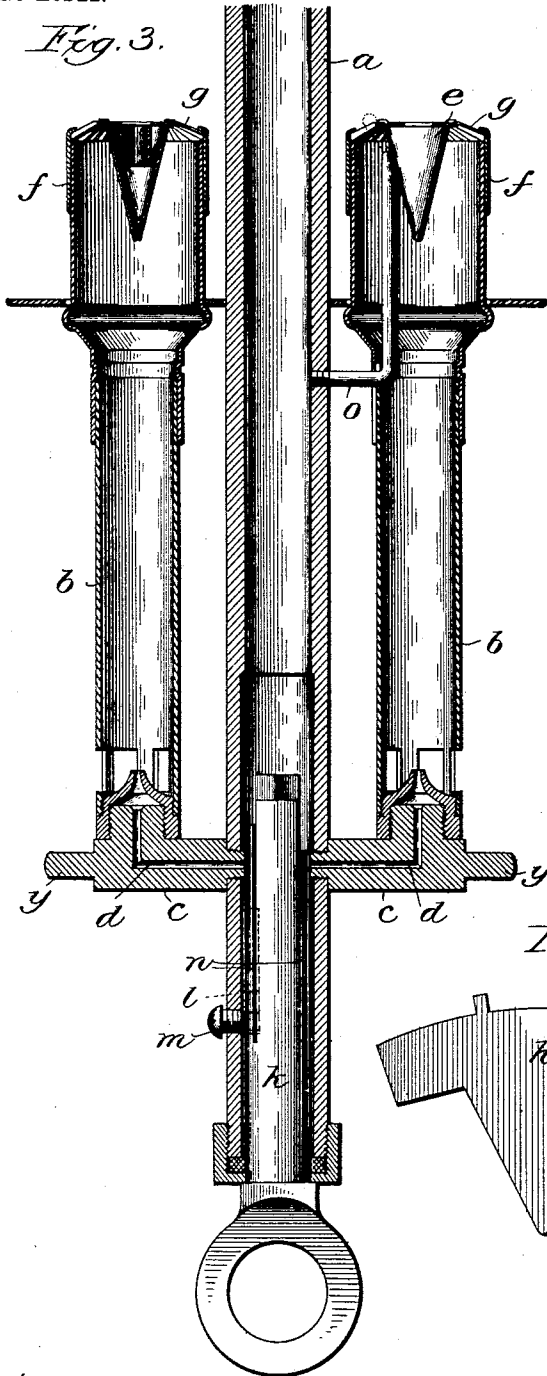


Fig. 6.

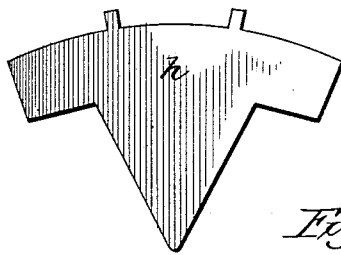


Fig. 7.

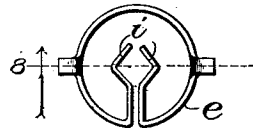
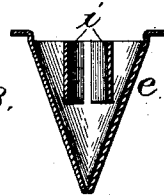


Fig. 8.



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UNITED STATES PATENT OFFICE.

CYRUS A. HAAS, OF ST. LOUIS, MISSOURI.

INCANDESCENT GAS-LAMP.

SPECIFICATION forming part of Letters Patent No. 733,192, dated July 7, 1903.

Application filed June 14, 1902. Serial No. 111,657. (No model.)

To all whom it may concern:

Be it known that I, CYRUS A. HAAS, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain
 5 new and useful Improvements in Incandescent Gas-Lamps, of which the following is a specification.

The invention relates to that class of gas-lamps in which Bunsen burners having mantles of the Welsbach type may be used, and particularly to the means of holding the same
 10 in position and protecting them from the mechanisms and action of the elements, all of which will more fully hereinafter appear.

The principal object of the invention is to provide a simple, economical, and efficient
 15 incandescent gas-lamp.

A further object of the invention is to provide a simple, economical, and efficient incandescent gas-lamp in which a multiplicity of Bunsen burners and mantles may be held
 20 and protected.

A further object of the invention is to provide an incandescent gas-lamp having a plurality of Bunsen burners with means by which
 25 one or more of the burners may be supplied with gas whenever desirable or necessary.

A further object of the invention is to provide an incandescent gas-lamp having a plurality of Bunsen burners with a draft-chamber above the same by which the products of combustion and heated gases may be drawn
 30 off efficiently and economically.

Further objects of the invention will appear from an examination of the drawings and the following description and claims.

The invention consists principally in an incandescent gas-lamp in which there is combined a supply-pipe provided with a plurality of Bunsen burners and a valve in such
 40 pipe for cutting off or admitting a supply of gas to one or more of such burners.

The invention consists, further, in a lamp of the class described in which there is combined a central gas-supply pipe vertically arranged therein and provided with a plurality of Bunsen burners arranged around the same and a gas-controlling valve reciprocatingly
 45 mounted in the lower part of such gas-supply pipe for cutting off or furnishing a supply of gas to one or more of the burners.

The invention consists, further and finally,

in the features, combinations, and details of construction hereinafter described and
 55 claimed.

In the accompanying drawings, Figure 1 is a vertical sectional elevation of a lamp constructed in accordance with these improvements, taken at or near its longitudinal center, showing a lamp as it appears when constructed in accordance with these improvements, the dotted outline showing the position of the glass globe, wind-shield, and supporting-basket when inserting or removing
 60 such parts; Fig. 2, a broken elevation of a portion of the wind-shield, showing slot-and-pin mechanism for holding the same in its up position or permitting it to drop into its shielding position; Fig. 3, an enlarged sectional elevation of the lower portion of the gas-supply pipe, the controlling-valve, and burner mechanism; Fig. 4, a perspective view of the controlling-valve removed from the lamp; Fig. 5, a plan view thereof; Fig. 6, a
 65 "developed" view of the supporting mechanism for the mantle-rod before it is formed into the desired shape; Fig. 7, a plan view of the rod-support after it is given the desired shape, and Fig. 8 a vertical sectional elevation taken on line 8 of Fig. 7.

In the art to which this invention relates it is well known that incandescent gas-lamps are assuming an important position in the art of lighting, particularly lamps which are known as of the "Welsbach" type, in which
 80 there is a Bunsen burner and an incandescent mantle for furnishing the light. It is also well known that these incandescent mantles are very fragile and liable to be broken by the least contact or shaking with the wind. It becomes desirable, therefore, to provide means by which these mantles, with their supporting-burners, may be protected from the action of the other mechanisms and also from the action of the elements. The principal object of this invention, therefore, is to provide a lamp having a plurality of these burners and
 95 mantles in which these advantages may be obtained, as well as the further advantage of being able to use but one or more of the burners, as occasion requires, all of which will more fully hereinafter appear.

In constructing a lamp in accordance with these improvements I provide a gas-supply

pipe *a*, vertically and centrally arranged therein. Secured to the lower part of this pipe and surrounding the same is a plurality of Bunsen burners *b*, of any well-known type, 5 by means of the projections *c*, through which the gas-supply passages *d* pass. Each of these burners is provided with rod-holders *e*, that are removably held in position by means of caps *f*, which are also removably secured 10 to the upper part of the burner and provided with reticulated portions *g*, through which the gas passes before it can be ignited and which prevents the flame from going back into the burner-body. These rod-holders are 15 formed of blanks *h* (shown in Fig. 6) and which are formed of the shape shown in Figs. 7 and 8, with inwardly-projecting centrally-arranged spring-fingers *i*, which grasp the mantle-supporting rod (not shown) that holds 20 the mantles *j* in position. The lower part of this rod-holder, it will be seen, is formed in the shape of an inverted cone that deflects the gas to the outer and upper end thereof, causing it to pass through the screen or reticulated portion *g* of the burner-cap, so as to be 25 ignited at a distance from the pilot *o*, hereinafter described, so as to prevent oxidation at the end of the pilot. The flame produced from the gas from the pilot is thus on and 30 above the gauze and not in the end of the pilot and is a blue flame, thus preventing the smoking of the mantle, and it will be readily seen that the gas being forced toward the outside of the burners by the conical burner-rod holders and reticulated cap portions *g* of such 35 rod-holders prompt ignition is thus produced and assured.

It is oftentimes desirable to use one or more of these burners, and thus provide the amount 40 of light that may be desirable or necessary. In order to accomplish this result, I extend the gas-pipe downwardly below the burners in the lower end of the same and slidingly mount a split cylindrical controlling-valve 45 *k* therein. This controlling-valve is provided with a slot or groove *l*, with which a pin or screw *m* in the gas-pipe may engage, and thus permit a limited reciprocating movement of the valve. The upper part of this controlling-valve, as above suggested, is split by 50 means of a number of slots *n* and cut off so that it is step-shaped—that is, each one of these “wings,” as they might be termed, are of a different length, so that as the valve is 55 pulled downwardly one passage will be first opened, that to the right burner. A further movement of the valve downwardly will open the gas-passage to the left burner. The continued movement of the controlling-valve 60 will open the passage to the burner immediately in front of the gas-supply pipe, while the final movement will open the gas-passage to the last burner. It will thus be seen that 65 by moving the controlling-valve one or more of the burners will be supplied with gas or the gas cut off therefrom.

It is necessary, particularly in connection

with lamps that are used out of doors, that a pilot-flame be used and that a pilot-pipe be used to connect the gas-supply pipe with one 70 of the burners and in such arrangement that the drip or condensation due to moisture in the gas or otherwise will not affect or enter such pipe. In order to provide for this, I provide a pilot-pipe *o* and connect it with 75 the gas-supply pipe at the lower portion thereof. This pipe enters the Bunsen burner to the right of Fig. 1 and has its outlet immediately under the screen of the burner-caps, where it may be ignited, and when such 80 burner is furnished with the full supply of gas it ignites the same and through the medium thereof all the other burners. In this way it will be seen that the pilot-flame is never interfered with by moisture and does 85 not furnish gas enough to make a visible light—two decided advantages.

To provide for the carrying off of the heated gases and products of combustion, a cylindrical tube or shield *p* is provided and arranged 90 above such burners and around the gas-supply pipe, so that a draft is formed in such shell when the other parts are in position and the heated gases and products of combustion are carried off therethrough. 95 Arranged above this shell and secured thereto and to the gas-supply pipe is a hood *q*. This hood, as above suggested, is secured to the shell and supports the same by means of the metal scrolls *r*, which act as efficient connecting means that do not in any way interfere 100 with the draft of the lamp. The hood, as will be seen, is arranged above the shell and acts as a protection therefor, preventing wind, rain, and foreign materials from blowing 105 or falling down therein, while at the same time protecting the ceiling or other portion of the building to which the gas-pipe is secured. This arrangement also dispenses with all of the usual chains, cords, and cables. 110

A glass globe *s* is provided and arranged in position around the burners with their mantles, so as to protect the same, as is usual in such instances, but permit the waves of light to pass therethrough. It is necessary to take 115 this globe away from its engagement with the lamp to insert new mantles or clean the globe, and during the act of taking it away as well as replacing it in position it is desirable to prevent the globe from contacting the 120 mantles, for the reason that if it should happen to contact the mantles, which are very fragile, it would be liable to break one or more of them. At the same time it is desirable that guiding means shall protect the 125 fragile mantles from gusts of air and wind. To accomplish this, I provide what I term a “shielding-pipe” *t*, which is slidingly mounted inside of the cylindrical tube or shell and which has its lower end engaging with the 130 upper part of the glass globe, as shown particularly in Fig. 1. This pipe or inner cylindrical tube portion has an L-shaped slot *u*, the lower horizontal portion of which engages

with a pin *v* on the tubular shield, so that it may be held in its up position whenever desirable and permitted to drop down or be moved up whenever necessary. To hold the globe in position at the lower portion, I provide a basket-shaped structure *w*, which is formed of several pieces of wrought-iron joined together at their upper and lower portions by means of rings *x*. One or more of these pieces, which form the basket, is slotted to engage with projections *y* on the gas-supply pipe, so as to hold the parts in their upper position. A slight turning movement of the basket-shaped portion will release it from its engagement and permit it, with the globe and wind-shield, to drop into the position shown in dotted outlines in Fig. 1. During this dropping movement the guiding-shield prevents the globe from contacting the mantles. The globe can be removed and the shield will remain in its down position as long as desirable, thereby protecting the mantles from the action of the wind. Whenever necessary to remove the mantles, the wind-shield is moved upwardly and given a slight turn, so that its L-shaped slot or the horizontal portion thereof engages with a pin *v* and acts to hold the same in its operative position. The operator may then either remove the mantles or supply new ones, as may be desired.

To provide means for holding a suitable porcelain shade *z*, which shade has an upper central portion forming a groove, as it were, the outer shell is slotted, so as to provide a number of spring-fingers 10. These spring-fingers are of such form or shape that the shade may be placed in engagement therewith, the fingers yieldingly engaging with the groove of the upper portion of the shade, thereby holding it in central position. This holding means for the shade is very desirable, in that it permits the shade to contract or expand without being injured by the holding mechanism. At the same time the spring-fingers permit of a variation in size of the upper portion of the shade—that is, the upper portions of the different shades may vary in size, some being smaller and some larger.

There are many advantages in a lamp constructed in accordance with this improvement. First, the supply-pipe may be easily cleaned out, and the peculiar construction and arrangement of the valve are such that one or more of the burners may be thrown into and out of operation whenever desirable or necessary; second, there is decided advantage in the means by which the globe is removed from and placed in position without any danger of injuring the fragile mantles; third, in the arrangement of parts which form the draft-chamber and protecting-hood, and, fourth, the organized lamp, which as a whole is economical to build and repair, as well as very efficient in operation, in that it has a large number of adjustments, all of which

are obtained without the use of adjusting-screws or similar mechanism.

I claim—

1. In a lamp of the class described, the combination of a supply-pipe, a plurality of Bunsen burners on such pipe, means for supporting mantles thereon, and a longitudinally-movable valve for cutting off and furnishing a supply of gas to any desired number of such burners, substantially as described.

2. In a lamp of the class described, the combination of a central gas-supply pipe vertically arranged therein and provided with a plurality of Bunsen burners arranged around the same, and a gas-controlling valve reciprocatingly mounted in the lower part of such gas-supply pipe for cutting off or furnishing a supply of gas to one or any desired number of the burners, substantially as described.

3. In a lamp of the class described, the combination of a vertical gas-supply pipe centrally located therein and provided with a plurality of Bunsen burners at or near its lower end, and a split cylindrical valve slidingly mounted in the lower end of such supply-pipe for cutting off and furnishing a supply of gas to one or more of such burners; substantially as described.

4. In a lamp of the class described, the combination of a vertical gas-supply pipe, a plurality of Bunsen burners arranged around the same at or near the lower end thereof, means for supporting an incandescent mantle on each of such burners, a pilot-pipe connecting the gas-supply pipe with one of such burners for furnishing a pilot-flame therein, and a cut-off longitudinally-movable stepped valve mounted in the lower part of such gas-supply pipe for cutting off and furnishing a supply of gas to any desired number of the burners, substantially as described.

5. In a lamp of the class described, the combination of a vertical gas-supply pipe centrally arranged, a plurality of Bunsen burners connected with such gas-supply pipe and arranged around the lower part thereof each provided with a mantle, a valve for cutting off and furnishing a supply of gas to such burners, a cylindrical shield arranged above such mantles and vertically movable with relation thereto, a hood arranged above the cylindrical shield, a glass globe surrounding the burners, and means for removably holding such globe mounted in engagement with the tube and movable therewith in position with relation to such tube, substantially as described.

6. In a lamp of the class described, the combination of a gas-supply pipe vertically and centrally arranged, a plurality of Bunsen burners connected with such gas-supply pipe and arranged at the lower portion thereof, a valve for cutting off and furnishing a supply of gas to such burners, a cylindrical tube or shell arranged above such burners and forming a draft-chamber, a hood secured to the

gas-pipe and to the cylindrical shell above the upper part thereof, a glass globe surrounding such burners, a shielding-pipe slidably mounted in the cylindrical shell in engagement with the upper part of the globe and movable therewith with relation to the burners, and means for holding and supporting the lower end of the glass globe in position, substantially as described.

7. In a lamp of the class described, the combination of a gas-supply pipe vertically and centrally arranged, a plurality of Bunsen burners connected with such gas-supply pipe and arranged around the bottom part thereof, valve mechanism for cutting off and furnishing a supply of gas to such burners, a cylindrical tube or shell arranged above such burners to form a draft-chamber, a hood secured to the supply-pipe and cylindrical shell and arranged above the latter, a glass globe arranged around the burners, a shielding-pipe slidably mounted in the cylindrical shell and engaging the upper part of the globe to act as a guide therefor and as a wind-shield for the mantles when the globe is out of position, and a basket-shaped support engaging the lower part of the globe and removably secured to the lower part of the lamp structure, substantially as described.

8. A lamp of the class described comprising a gas-supply pipe vertically and centrally arranged, a plurality of Bunsen burners connected with such gas-supply pipe and arranged around the lower part of the same, valve mechanism for cutting off and furnishing a supply of gas to such burners, mantles arranged on such burners, a cylindrical tube or shell arranged above the burners, a hood arranged above the shell and secured thereto and to the gas-supply pipe, a glass globe surrounding the burners, a shielding-pipe slidably mounted in the cylindrical shell engaging the upper part of the glass globe and acting as a guide therefor and as a wind-shield for the mantles, spring-fingers on the lower part of the cylindrical shell, a shade held in position by such spring-fingers and above the glass globe, and a basket-shaped support for the lower portion of the glass globe removably engaging the lower part of the lamp structure, substantially as described.

9. A lamp of the class described comprising a gas-supply pipe vertically and centrally arranged, a plurality of Bunsen burners connected with such gas-supply pipe and arranged around the lower part thereof, a movable valve in the lower part of such gas-supply pipe for cutting off and furnishing a supply of gas to one or more burners, a mantle on each of such burners, a cylindrical tube or shell arranged above the burners to form a draft-chamber, a hood arranged above the shell and secured thereto and to the gas-supply pipe, a glass globe surrounding the burners and their mantles, a shielding-pipe slidably mounted in the cylindrical shell and engaging the upper part of the glass globe

and provided with pin-and-slot mechanism to hold it in its upper position or permit it to drop down with the glass globe and act as a shield for the mantles, a basket-shaped structure of wrought-iron engaging the lower part of the glass globe and provided with slots engaging projections on the gas-supply pipe for removably holding it and the other parts in operative position, spring-fingers on the lower part of the cylindrical shell, and a shade yieldingly held in position above the glass globe by means of such fingers, substantially as described.

10. In a lamp of the class described, the combination of a plurality of burners, a gas-supply pipe arranged between such burners provided with a passage having openings communicating with each of the burners, and a valve movably mounted in the lower portion of such supply-pipe and provided with a step portion for each of such openings arranged in different planes longitudinally of the valve, substantially as described.

11. In a lamp of the class described, the combination of a plurality of burners, a gas-supply pipe arranged between such burners provided with a passage having openings communicating with each burner, and a longitudinally-movable valve mounted in such supply-pipe and having a plurality of steps arranged in successive planes longitudinally of the valve and in alternate order peripherally thereof, substantially as described.

12. In a lamp of the class described, the combination of a plurality of burners each provided with a mantle, a gas-supply pipe provided with a passage therein having openings communicating with such burners, valve mechanism for controlling the supply of gas to the burners, a cylindrical shield mounted above such mantles in vertically-movable relation thereto, and a glass globe mounted upon such pipe and vertically movable therewith in relation to the mantles, substantially as described.

13. In a lamp of the class described, the combination of a plurality of burners, a gas-supply pipe provided with a passage therein communicating with such burners, a glass globe surrounding the burners, a cylindrical shield mounted above such globe forming part of a draft-chamber communicating with the globe, and a supply-pipe extending through the globe centrally for supplying gas to the burners and holding the globe removably in engagement with such cylindrical shield, substantially as described.

14. In a lamp of the class described, the combination of a plurality of burners, a gas-supply pipe provided with a passage therein having openings communicating with such burners, a cylindrical shell mounted above the burners, a shade mounted at the bottom of such shell, and a plurality of elastic fingers mounted upon the shell in engagement with the shade for supporting it independently of the globe and holding it yieldingly

and removably in position upon the shell, substantially as described.

5 15. In a lamp of the class described, the combination of a plurality of burners provided with a mantle-rod, a mantle-rod holder
10 for each of such burners provided with an inner downwardly-extending inverted-cone-shaped portion, and an upper reticulated cap portion secured to the upper portion of the
10 burner, substantially as described.

16. In a lamp of the class described, the combination of a burner, a mantle for such burner provided with a supporting-rod, a cap

secured to the burner comprising a reticulated upper portion, an integral downwardly- 15
extending inverted-cone-shaped deflector arranged centrally of such cap and beneath the reticulated portion thereof, and integral
spring-arms extending to the center of the cap for supporting the mantle-supporting rod, 20
substantially as described.

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