

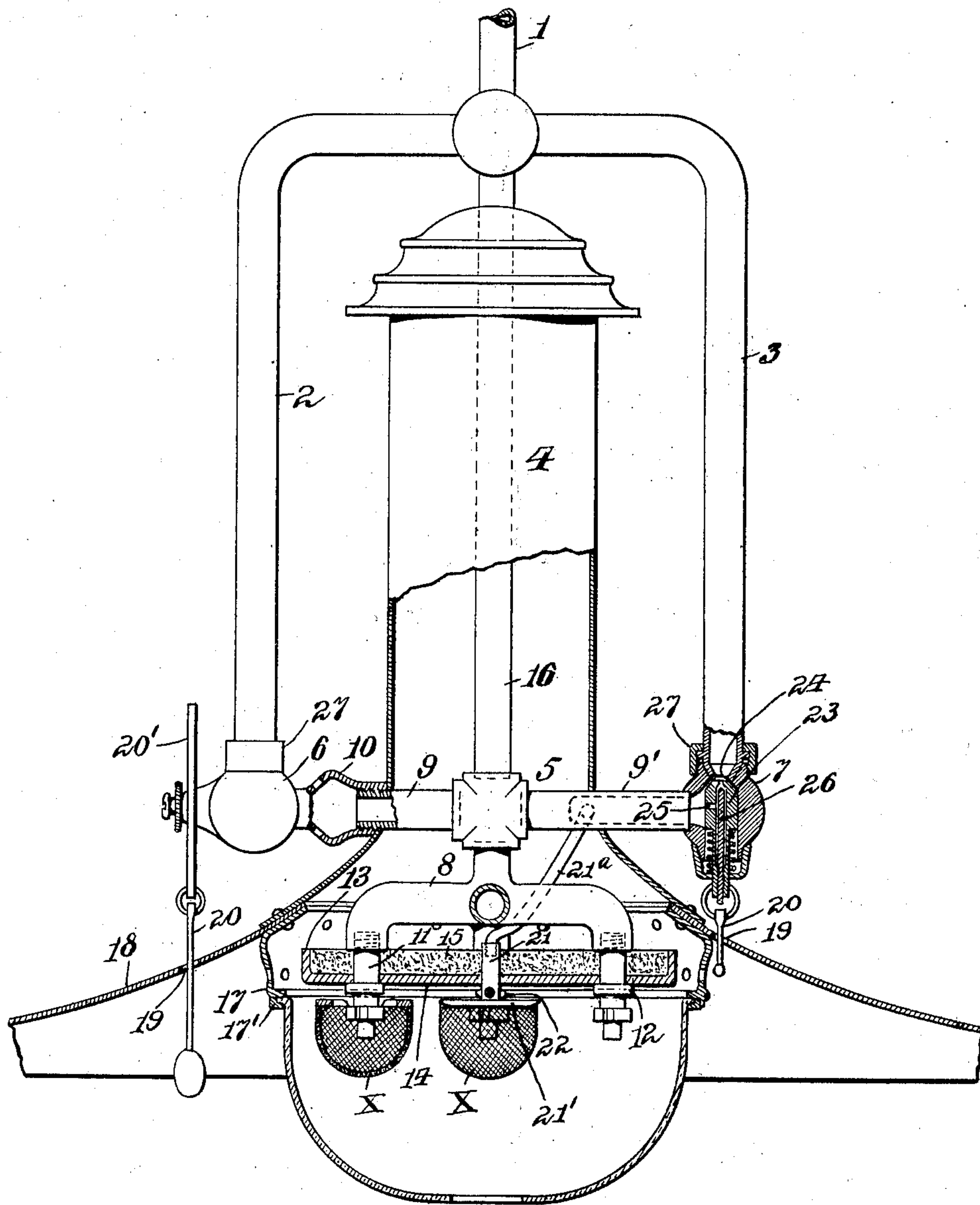
No. 850,568.

PATENTED APR. 16, 1907.

W. DE FREITAS.  
INVERTED BURNER GAS LAMP.  
APPLICATION FILED JAN. 27, 1905.

2 SHEETS—SHEET 1.

*Fig. 1.*



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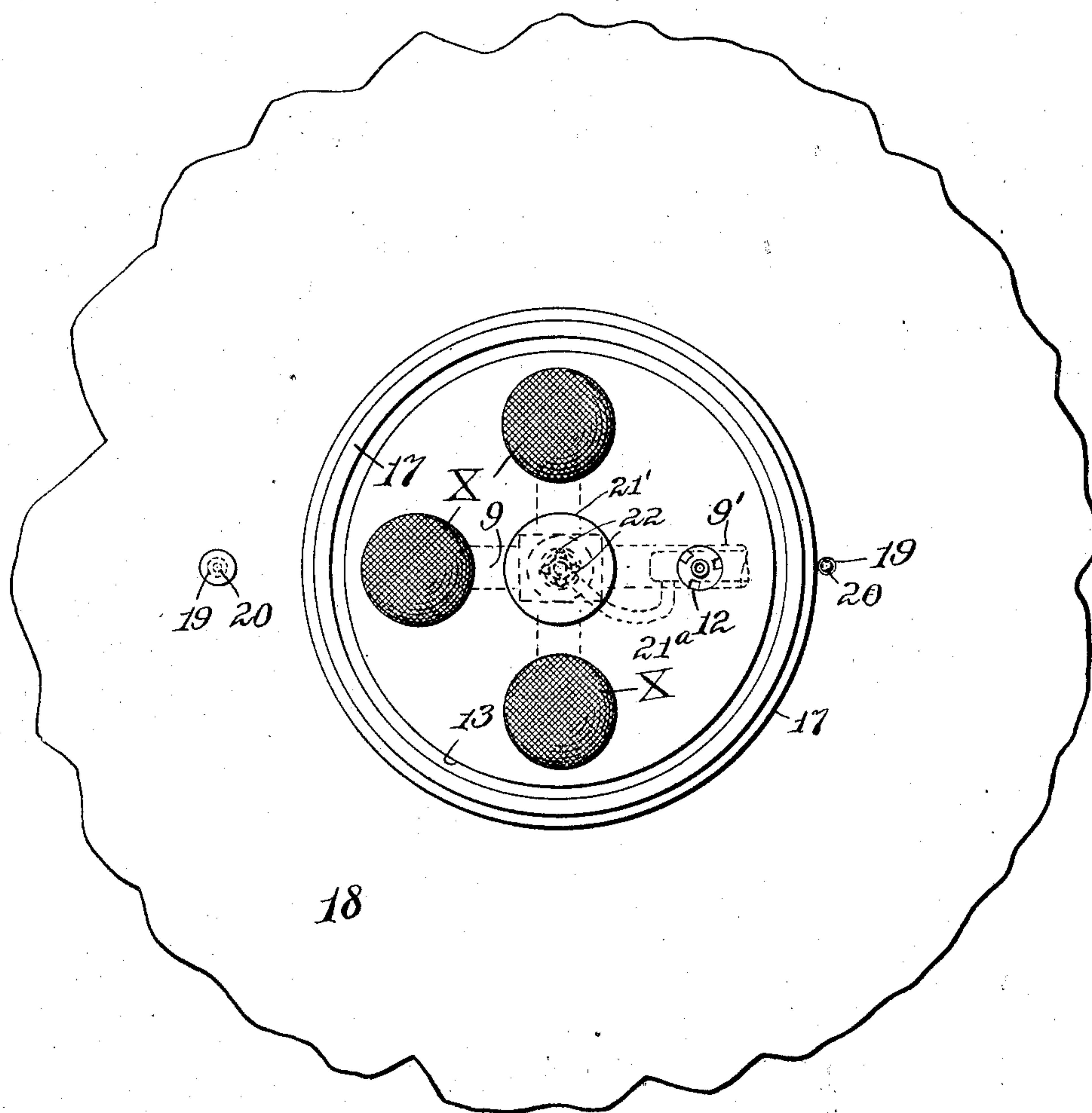
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2 SHEETS—SHEET 2.

*Fig. 2.*



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# UNITED STATES PATENT OFFICE.

WILLIAM DE FREITAS, OF NEW YORK, N. Y., ASSIGNOR TO CONSOLIDATED GAS COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

## INVERTED-BURNER GAS-LAMP.

No. 850,568.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed January 27, 1905. Serial No. 242,848.

*To all whom it may concern:*

Be it known that I, WILLIAM DE FREITAS, a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Inverted-Burner Gas-Lamps, of which the following is a full, clear, and true specification.

This invention relates to inverted-burner gas-lamps of the type wherein a fabric or mantle of rare-earth oxids is rendered incandescent in a bunsen-flame; and the invention involves improvements in the operation and relative arrangement of the several parts and combinations and subcombinations of the same, as will be presently described, and more particularly pointed out in the accompanying claims.

One of the primary objects of this invention is the production of a lamp of the character indicated which is of simple construction, not likely to deteriorate in efficiency under continued usage, and which is shadowless below its horizontal plane.

Further objects are the adequate protection from the heat of the burners of the gas-supply pipes and the air and gas mixing chamber and also the facility of manipulation of the lamp and its several parts.

Referring to the drawings, Figure 1 is a side elevation, with parts broken away and other parts shown in vertical section, of a gas-lamp involving my invention; and Fig. 2 is a bottom plan view of the same with the glass globe removed.

The lamp, as shown in the drawings, is designed to be suspended from the central depending gas-supply pipe 1, which branches at an ornamental ball-joint and terminates in two substantially vertical side pipes 2 and 3, which latter are shown as straight pipes, but may obviously assume various configurations to accommodate the casing or stack 4 between them. The side pipes are mechanically joined by a cross member 5, piercing the stack near its base, and at the elbows, formed by side pipes and cross member, the gas-cocks 6 and 7 are located for controlling the gas-supply of the lamp. The burner-head 8 is supported from the cross member 5 below the level of the same and has communication, through the section or cross-pipe 9 of that member, with the side pipe 2, from which it receives its supply of gas, the air

necessary for complete combustion being admitted and mixed with the gas by means of the mixing-chamber 10, forming a part of the section 9 of the cross member, but exterior to the stack. The burner-head may be conveniently formed as a spider, and is shown in the present case as having four arms opening downwardly and internally threaded to receive the upper ends of the burner-tubes 11. The latter are short sections of tubing provided with shoulders 12 for holding a heat-deflecting plate 13 and also with mantle-supporting means, as shown in the drawings, the burners of course being arranged to project their flames downwardly. The deflector-plate 13 is composed of a layer or disk 14 of metal enameled on its under side, so as to serve as a light-reflector, and preferably provided with a peripheral flange giving it the shape of a dish, and a backing 15, of refractory material—for example, asbestos—is contained within this receptacle. The plate is of greater diameter than the diameter of the burner-head or spider and than the diameter of the body of the stack and is formed with apertures of appropriate number and position to receive the several burner-tubes when the latter are screwed into their respective spider-arms, the deflector-plate in this manner becoming securely held in proper position between the burner-head and the shoulders 12.

While only four burner-tubes are illustrated herein, it will of course be understood that a greater or less number may be employed, as desired, provided the deflector-plate and burner-head are correspondingly modified. The mantles X and their mode of attachment to the burner-tubes or other support form no part of the present invention, and as the kind shown in the drawings is one familiar in the art a description of the same will not be necessary.

The casing 4, which forms the stack, provides the escape for the burned gases and is supported mainly by the cross member 5, but may also be reinforced and steadied by the rod 16, extended centrally from the pipe 1 through the cap of the stack, with its lower end seated in a suitable socket in the cross member. The base portion of the stack is flared outwardly and around the burner-head, so that the latter is located beneath the



stack or within the mouth of the flare, and the heated gases rising from the edge of the deflector-plate pass freely upward through the stack in obvious manner. It will be noted that the escape of burnt gases is thus deflected away from the burner-head and likewise isolated from the air and gas mixing chamber, which are features of importance in the present invention. The flanged edge of the globe-ring 17 is secured to the lowest edge of the stack, with the inner margin of the reflector-shade 18 interposed between them, the joint between the stack, ring, and reflector being formed in a plane above the horizontal plane of the mantles and preferably above the deflector-plate, so that the light from the mantles will be unobscured. The globe-ring is also located above the level of the mantles and is perforated, as shown, to admit air to the burner. The glass globe mounted in the frame 17', hinged to ring 17, is also perforated to permit an upward draft of air.

The gas-cocks 6 and 7, above mentioned, are thus located above the reflector-shade, and as the latter is frequently desired to be of comparatively large diameter it is provided with perforations, as at 19, to receive links or other cock-operating connections 20, which, however, do not extend sufficiently downward to interfere with the radiation of light in all directions from the burner. As shown herein, the cock 6 is operated by a lever 20', oscillating on a horizontal axis.

The pilot-light is composed of a central vertical tube 21, passing through the plate 13 and terminating in a cap or deflector plate 21'. Four pilot-burner tips 22 are disposed upon the end of the tube just above the deflector-plate 21' and arranged to project their flames respectively toward each mantle, carbonization of the gas at the tips being prevented by the protection afforded by the plate 21'. The upper end of the tube 21 is threaded onto the tubing 21<sup>a</sup>, which leads to the section 9' of the cross member 5, which has a connection with the side pipe 3 through the pilot-cock 7, the connection from pilot to side pipe being isolated from the supply-passage for the burner-head above described. The pilot-cock consists of a plug 23, held against its seat 24 by means of a spiral spring, and the lower extremity of the plug is provided with a ring or handle whereby it may be operated. The plug is bored internally and also provided with a lateral port 25, through which a definite supply of gas is allowed to constantly pass in order to keep the pilot-burner lighted, this supply being regulatable by means of the needle 26 within the plug, which may be screwed toward or from the end of the internal bore of the plug. By pulling down the plug 23 increased supply of gas is admitted to the burner, which en-

larges the pilot-flames and lights the lamp, and upon release of the plug the supply is cut down to the definite minimum through the passage 25, above referred to. The valve-casings for both cocks are shown as balls or spheres, and the side pipes 2 and 3 are connected to them by means of unions 27, so that the cross member 5 and the parts suspended by it may be readily removed.

It will be understood that the arrangement of the various parts hereinbefore referred to may be considerably modified from that shown in the drawings and that various other features may be applied to the apparatus shown without departing from the spirit and scope of the following claims.

Having described my invention, what I claim, and desire to secure by United States Letters Patent, is—

1. In an inverted-burner gas-lamp, an inverted burner-head and a shouldered burner-tube attached thereto, in combination with an apertured deflector-plate receiving said tube and adapted to be held between the shoulder thereof and the said burner-head.

2. In a gas-lamp, a burner-head or spider, a plurality of inverted burner-tubes carried thereby each provided with means for supporting a mantle and with a shoulder above said means, in combination with a heat-deflector plate supported upon said shoulders.

3. In an inverted-burner gas-lamp, an inverted burner-tube, means for supporting a mantle in association therewith, and a dish-like deflector-plate having a filling of refractory material and an aperture for receiving said tube.

4. In an inverted-burner gas-lamp, an inverted burner-tube, means for supporting a mantle at the end thereof and a heat-deflector adapted to be located above said mantle consisting of a dish-like receptacle containing a filling of refractory material.

5. In an inverted-burner gas-lamp, a gas-supply pipe and burner-head, an inverted burner-tube depending from said head adapted to support a mantle and a deflector of greater diameter than said head interposed between the same and the mantle and a backing of refractory material for said deflector.

6. The combination in an inverted-burner gas-lamp having an inverted burner-tube and a deflector-plate above the lower end of the same, of a casing above said plate forming a stack, a gas-supply pipe for said tube entering said casing through the lateral wall thereof and above the deflector-plate, and an air and gas mixing chamber for said tube exterior to said casing.

7. An inverted-burner gas-lamp, comprising an inverted burner-tube adapted to support a mantle, a heat-deflector above the flame thereof and a casing above said de-



flector forming an escape-passage for the burnt gases, in combination with a gas-supply pipe for said burner provided with an air and gas mixing chamber exterior of said passage.

8. An inverted-burner gas-lamp, comprising a burner-head provided with a plurality of inverted burner-tubes, a deflector between said head and the openings of said tubes, and a casing above said deflector, adapted to form an escape-passage for the burned gases, in combination with a gas-supply pipe provided with an air and gas mixing chamber outside of said passage.

9. In an inverted-burner gas-lamp, a stack and a horizontal cross-pipe passing transversely through the same, a burner-tube connected with said pipe to project its flame downwardly and means for supporting a mantle in said flame, in combination with a deflector-plate below the cross-pipe and an air and gas mixing chamber in said cross-pipe exterior to the stack.

10. In a gas-lamp, a central depending support and two side pipes connected therewith in combination with a cross-pipe, a burner-head carried by said cross-pipe, a stack mounted on said cross-pipe above the burner-head, and means for detachably connecting said cross-pipe with the side pipes.

11. In a gas-lamp, a central depending support and two side pipes forming terminations thereof, in combination with a cross-pipe detachably connected with said side pipes, a burner-head carried on said cross-pipe, and a rod extended from said central support into engagement with said cross-pipe.

12. In an inverted-burner gas-lamp, a central depending support terminating in two side pipes, a cross-pipe, detachably connected with said side pipes, a burner-head and stack carried by said cross-pipe between the side pipes, and a reinforcing-rod extended from said central support, through the stack, and seated in a recess in said cross-pipe.

13. In a gas-lamp, a central depending support and two side pipes forming terminations thereof, in combination with a cross-pipe, a burner-head carried thereby, elbow-unions joining the ends of said cross-pipe to the ends of said side pipes and a gas-controlling cock formed in one of said elbow-unions.

14. In an inverted-burner gas-lamp, a central depending support, terminating in two substantially vertical side members and a vertical stack disposed between them, a cross member piercing said stack near its base and adapted to support the burner-head beneath the same, in combination with a reinforcing-rod extended from said central support through the stack to said cross member.

15. In an inverted-burner gas-lamp, a supply-pipe, a burner-head connected with and

depending therefrom, a plurality of burner-tubes mounted on said head to project their flames downwardly and a deflector-plate disposed between said head and the lower ends of said tubes.

16. In an inverted-burner gas-lamp, a cross-pipe containing an air and gas mixing chamber, a burner-head depending from said pipe and provided with a plurality of burner-tubes arranged to project their flames downwardly, in combination with a stack covering and containing said burner-head but excluding the said mixing-chamber, and a heat-deflector of greater diameter than the body of the stack located above said flames.

17. In an inverted-burner gas-lamp, a central depending supply-pipe terminating in side pipes, and a stack supported between the side pipes, in combination with an inverted burner beneath the stack fed by one of said side pipes and a pilot-light for said burner fed by the other side pipe.

18. In an inverted-burner gas-lamp, a stack and gas-supply pipes on opposite sides thereof, a cross member joining the side pipes and forming a support for said stack, in combination with an inverted burner having a gas-supply connection through said cross member with one side pipe, and a pilot-light having an isolated gas-supply connection through said cross member with the other side pipe.

19. In an inverted-burner gas-lamp, a cross supporting member with one end provided with a passage containing a gas-mixing chamber and the other end provided with an isolated passage, a burner-head supported by said member and connected with the first-mentioned passage and a pilot-light for the burner connected with the isolated passage.

20. In an inverted-burner gas-lamp, a central vertical stack and side pipes, a cross member joining said pipes, a burner-head and a pilot-light burner supported on the cross member and having isolated gas-supply connections therethrough respectively to the side pipes and a cock at each end of the cross member for controlling the said connections.

21. In an inverted-burner gas-lamp, side pipes and a stack supported between them, a cross member joining said pipes, an inverted burner depending therefrom having connection with a side pipe therethrough and a controlling-cock for said connection at the elbow of side pipe and member, in combination with a reflector supported by said stack below the cross member and a perforation in the reflector receiving the operating means of said cock.

22. In an inverted-burner gas-lamp, the combination with a burner-head provided with one or more burner-tubes arranged to project their flames downwardly, and mantle-supporting means, of a stack for the escape of



gases, a reflector and globe-base both joined to the base of the stack on a line above the horizontal plane of the said mantle.

23. In an inverted-burner gas-lamp, the combination with the inverted burner-head provided with a plurality of burner-tubes arranged to project their flames downwardly, of a pilot-light centrally disposed with respect to said tubes and a gas-supply connection for said pilot arranged above the lower ends of said tubes.

24. In an inverted-burner gas-lamp, the combination with a plurality of inverted burner-tubes, of a pilot-light, comprising a vertical tube provided with a plurality of gas-apertures and a protecting-plate beneath the latter, and gas-supply connections for said pilot-light arranged above the lower ends of said burner-tubes.

25. In an inverted-burner gas-lamp, the combination with a plurality of inverted burner-tubes, of a pilot-light comprising a vertical tube provided at its lower end with an attached deflecting-plate, a plurality of

burner-tips on said tube above the plate respectively arranged to project their flames toward the burner-tubes.

26. In an inverted - burner gas - lamp, a burner-head, an inverted burner-tube thereon adapted to project its flame downwardly, and a heat-deflector between said burner-head and the flame, in combination with a pilot-light located in an aperture in said deflector.

27. In an inverted - burner gas - lamp, a burner-head and an inverted burner-tube adapted to project its flame downwardly, in combination with a heat-deflector located in a position above said flame and a pilot-light carried by said deflector.

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

WILLIAM DE FREITAS.

Witnesses:

H. G. KIMBALL,  
WM. J. CLARK.