

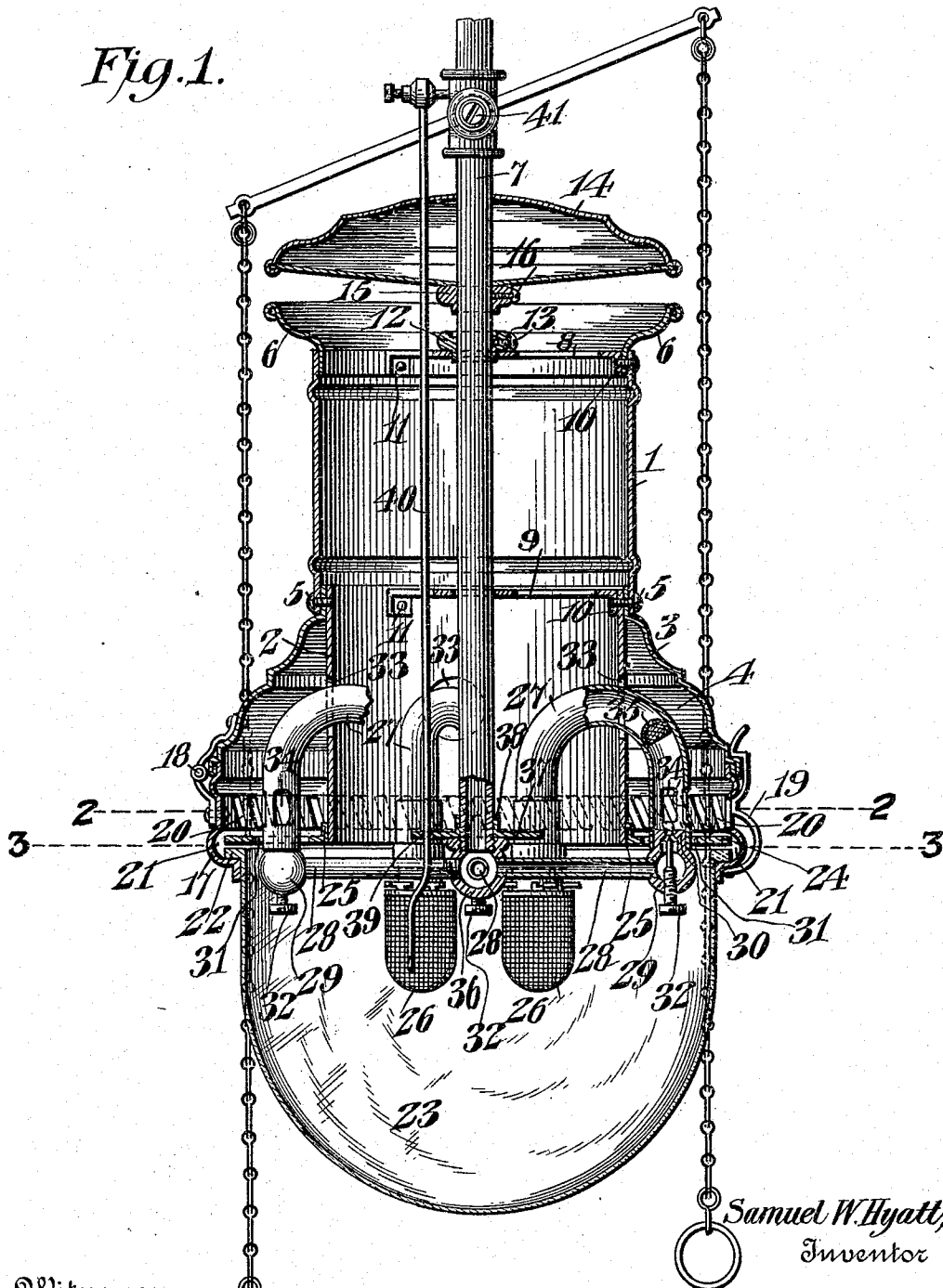
S. W. HYATT.
INVERTED GAS ARC LAMP.
APPLICATION FILED OCT. 30, 1908.

933,252.

Patented Sept. 7, 1909.

2 SHEETS—SHEET 1.

Fig. 1.



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Witnesses
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By

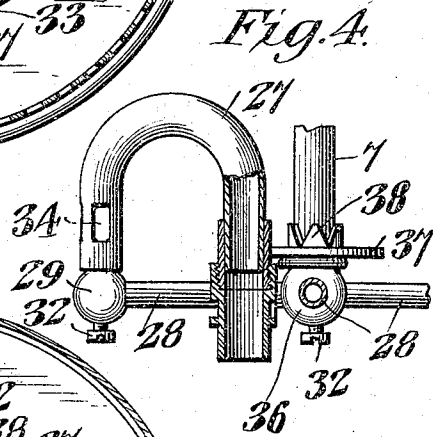
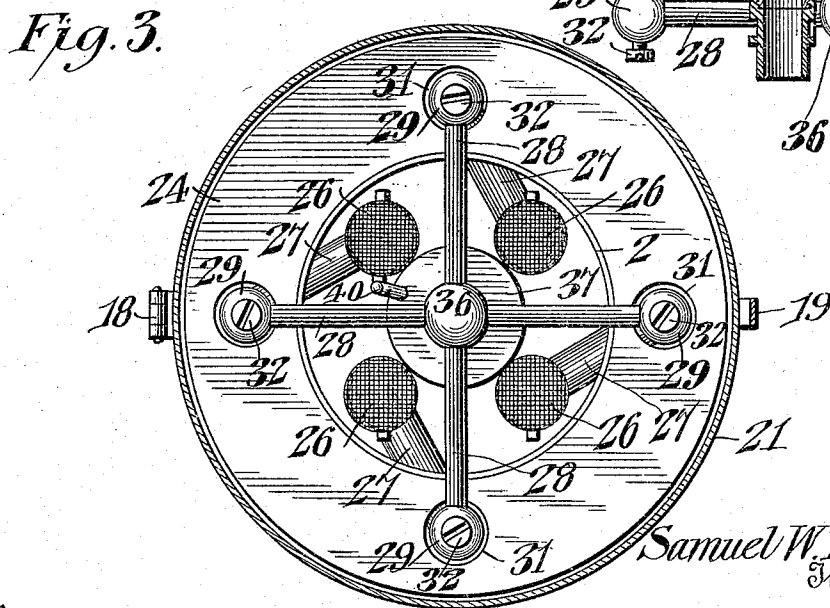
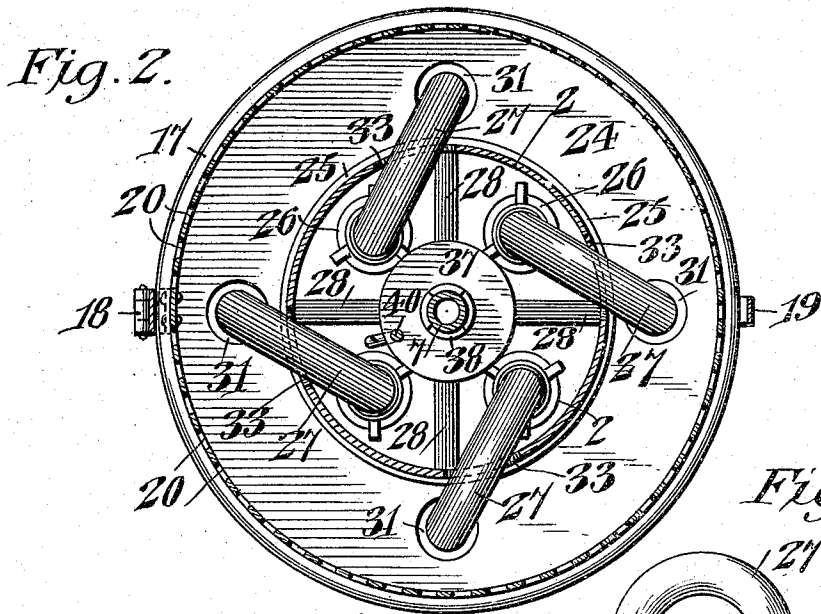
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

SAMUEL W. HYATT, OF COLUMBUS, OHIO.

INVERTED GAS ARC-LAMP.

933,252.

Specification of Letters Patent.

Patented Sept. 7, 1909.

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To all whom it may concern:

Be it known that I, SAMUEL W. HYATT, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a new and useful Inverted Gas Arc-Lamp, of which the following is a specification.

The invention relates to improvements in inverted gas arc lamps.

10 The object of the present invention is to improve the construction of inverted gas arc lamps, and to provide a simple, inexpensive and efficient inverted gas arc lamp equipped with one or more Bunsen tubes so arranged
15 that the air mixing ends of the tube or tubes will be located exteriorly of and protected from the heat of the combustion chamber by a shield, adapted to act as a light reflector in addition to operating to prevent heated
20 currents of air and the products of combustion from coming in contact with the air entering the air intakes, whereby a much more perfect combustion is produced.

25 A further object of the invention is to provide an inverted arc lamp having a combined light reflector and heat deflector or shield, adapted also to prevent any direct currents of air from entering the lamp and chilling the mantle, and to cause the air passing from
30 the exterior to be heated and deflected before striking the mantles.

The invention also has for its object to provide an arrangement, whereby many of the metal parts, which are affected by the
35 action of the heat, will not be exposed to the direct heat of the lamp.

Another object of the invention is to provide a lamp having a clear and unobstructed passage arranged to permit the heated air to
40 pass out rapidly from the lamp and adapted to create a suction, capable of drawing the fresh air rapidly into the lamp without causing the light to flicker or flash back in the Bunsen tubes.

45 With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims
50 hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing
55 any of the advantages of the invention.

In the drawings:—Figure 1 is a central

vertical sectional view of an inverted gas arc lamp, constructed in accordance with this invention. Fig. 2 is a horizontal sectional view, taken substantially on the line 60 2—2 of Fig. 1. Fig. 3 is a horizontal sectional view, taken substantially on the line 3—3 of Fig. 1. Fig. 4 is a detail sectional view of one of the Bunsen tubes.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

The lamp casing comprises in its construction upper and lower cylindrical sections 1 and 2 and a lower tapered or conical member 3, surrounding the lower section 2 and forming an intervening annular space or chamber 4. The upper and lower cylindrical sections constitute a cylindrical stack and provide an unobstructed passage for the escape of the heated air. The upper edge of the conical section 3 is fitted against the exterior of the lower cylindrical section 2 and is arranged within the lower end of the upper cylindrical section 1, the parts being secured together by screws 5, or other suitable fastening devices piercing the sections 1 and 2 and the conical member 3. The upper section of the casing is equipped with a flaring upper end 6, consisting of a ring or collar having a reduced lower edge fitted with
85 in and secured to the said upper section 1.

The casing is mounted on a central vertical gas tube 7 by means of upper and lower spiders 8 and 9, consisting of central portions and radial arms having their outer ends bent downwardly, forming attaching lugs or ears 10 and 11, which are pierced by screws, or other suitable fastening devices for securing the arms of the spiders to the casing. The central portions of the spiders are provided with circular openings to receive the central gas tube 7, and the upper spider is equipped with a collar or clamping ring 12, provided with a set screw 13, arranged to engage the central gas tube 7, whereby the casing is securely and adjustably fastened to the same. A hollow cap or cover 14 is also mounted on the central gas tube in spaced relation with the top of the casing. The cap or cover is adjustably supported by means of a clamping ring or collar 15, having a set screw 16, arranged to engage the gas tube 7 and adapted to permit the cap or cover 14 to be raised and lowered to adjust it toward and from the upper end of the casing.

The outer tapered or conical member 3 terminates short of the lower end of the lower cylindrical section of the stack and has a globe-carrying ring 17 connected with it at one side by means of a suitable hinge 18, and it is detachably connected with the conical or tapered outer member at a diametrically opposite point with a suitable catch 19. The globe-carrying ring constitutes the lower portion of the outer wall of the annular space or chamber, surrounding the lower portion of the stack, and the said ring is provided with an annular series of air intake apertures 20, arranged at an inclination and presenting an ornamental appearance. The globe-carrying ring, the casing and the cap may be finished or ornamented in any preferred manner, as will be readily understood. The lower portion of the globe-carrying ring is provided on its interior with an annular groove 21, arranged to receive an outwardly projecting annular flange 22 of a globe 23, whereby the globe is securely supported within and is carried by the ring 19.

The interior of the globe and the cylindrical portion or stack of the casing constitute a combustion chamber, and the annular space or chamber 4 is separated from the said combustion chamber by means of a horizontal diaphragm 24, surrounding the lower end of the stack and forming a bottom wall for the said space or chamber 4, and adapted to operate as a shield and also as a light reflector. The diaphragm is provided at its inner edge with an upwardly extending flange 25, which is fitted against and suitably secured to the exterior of the lower end of the lower section 2 of the casing. The diaphragm extends outwardly from the lower end of the cylindrical portion of the casing to the outer edge of the annular flange 22 of the globe 23, and it is interposed between the air inlet or intake apertures 20 and the mantles 26 of the Bunsen tubes 27.

The central vertical gas tube 7 is provided at its lower end with horizontal arms or branches 28, arranged diametrically of the lower end of the casing and extending to the vertical plane of the annular space or chamber 4 and provided at their outer ends with valve casings 29, having upwardly extending tubular portions 30, projecting through openings 31 of the horizontal diaphragm 24. The tubular portions of the valve casings are provided with suitable valve seats, and the said valve casings are equipped with needle valves 32 for controlling the flow of gas from the horizontal branch tubes or arms 28.

The Bunsen tubes, which are of goose-neck or approximately inverted U-shape, consist of inner and outer legs and a top connecting portion. The outer leg extends through the opening of the diaphragm and is fitted on the tubular portion of the valve

casing 29. The top connecting portion extends through an opening 33 of the lower cylindrical section 2 of the valve casing, and the inner leg is arranged within and depends from the stack or cylindrical portion of the casing, and is provided with suitable means for the attachment of the inverted mantles 26. The outer leg of each Bunsen tube is provided with air intake openings 34, located above the valve seat, and the air mixes with the gas in the outer portion or leg of the Bunsen tube and at the outer portion of the lamp exteriorly of the combustion chamber and at a point where direct currents of heated air will not interfere with the passage of air to the mixing chamber of the Bunsen tube. This secures a more perfect combustion than is possible where the air and gas are mixed at the top or upper portion of a vertical Bunsen tube, having a direct drop and arranged at a point where direct currents of heated air impinge against a Bunsen tube at the air inlet apertures. The air entering the openings 20 passes therefrom to the air intake openings of the Bunsen tubes and also through the openings of the diaphragm into the combustion chamber, and the air in passing through the openings of the diaphragm and around the gas regulating valves of the horizontal branch tubes is heated and deflected so that direct currents of cold air from the exterior are prevented from striking and chilling the mantles. The unobstructed passage afforded by the cylindrical stack for the escape of the heated air and products of combustion creates a sufficient suction to draw in through the apertures 20 a competent supply of fresh air without liability of causing the light to flicker or flash back within the Bunsen tubes, which are also equipped with approximately semispherical wire gauze guards 35 for preventing any flame in the Bunsen tube from flashing back to the gas supply pipe. Only the inner legs or portions of the Bunsen tubes and the gas supply pipes or tubes are located within the combustion chamber and are exposed directly to the heat of the lamp, and the particular arrangement of the diaphragm and the annular chamber 4 shields and protects from the direct action of the heat of the mantle many of the metallic parts, which are injuriously affected by heat.

The horizontal branch pipes or arms 28 of the central vertical gas pipe are connected with the same by a suitable coupling 36, which supports a spreader plate 37, consisting of a horizontal disk provided with a central opening for the gas tube 7 and arranged to space the inner legs of the Bunsen tubes. The spreader plate is preferably provided at the central opening with upwardly extending lugs or flanges 38 to fit against the gas tube 7, and it has a perforation 39 at its outer portion through which passes the lower

portion of a pilot lighter tube 40, connected at its upper end in the usual manner with the gas tube above the valve 41.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A lamp of the class described including a casing, a vertical gas supply pipe extending centrally through the casing, and an approximately inverted U-shaped Bunsen tube piercing the casing and composed of inner and outer legs separated by portions of the casing, the outer leg having an air intake aperture and being connected with the gas supply tube and the inner leg being provided with means for the attachment of a mantle.

2. A lamp of the class described including a cylindrical casing, a vertical gas supply pipe extending centrally through the casing and having an approximately horizontal portion, and an approximately inverted U-shaped Bunsen tube piercing the casing and composed of inner and outer legs separated by portions of the casing, the outer leg being connected with the gas supply pipe and having an air intake aperture and the inner leg being provided with means for the attachment of a mantle.

3. A lamp of the class described including a casing provided with a stack, a gas supply pipe having an approximately horizontal portion located below and extending outwardly beyond the stack, and an approximately inverted U-shaped Bunsen tube extending through the stack and having its legs arranged interiorly and exteriorly of the same, the outer leg being connected with the gas supply pipe and provided with an air intake opening, the inner leg being provided with means for the attachment of a mantle.

4. A lamp of the class described including a casing forming a stack and having a chamber arranged exteriorly of the same, a gas tube passing through the stack and provided with a branch tube extending to a point adjacent to the said chamber, and an approximately U-shaped Bunsen tube connected with the said branch tube and composed of inner and outer legs, the outer leg being located within the said chamber and the inner leg being located within the said stack and provided with means for the attachment of a mantle.

5. A lamp of the class described including a casing having a stack and provided with a chamber surrounding the same, a gas tube passing through the stack and provided with branches extending outwardly beneath the said chamber, and a plurality of approximately inverted U-shaped Bunsen tubes extending through the stack and having inner and outer legs, the outer legs being located within the said chamber and provided with

air intake apertures and connected with the branch tubes and the inner legs depending from the stack and provided with means for the attachment of a mantle.

6. A lamp of the class described including a casing provided with a stack and having an annular chamber surrounding the stack and provided with air inlet openings, a gas supply tube passed through the stack and having branches extending outward beneath the said chamber and provided at their outer ends with gas regulating valves, and approximately inverted U-shaped Bunsen tubes extending through the stack and having their inner legs arranged within the said chamber and passing through the bottom thereof and connected with the said branch tubes and provided with air inlet apertures.

7. A lamp of the class described including a casing provided with a stack and having an exterior chamber surrounding the stack, a globe connected with the casing at the outer wall of the said chamber adjacent to the bottom thereof, a gas supply pipe having branches extending to points beneath the said chamber, and approximately inverted U-shaped Bunsen tubes extending through the stack and having their outer legs passing through the said chamber and connected with the branches of the gas supply pipe.

8. A lamp of the class described including a casing comprising a cylindrical portion forming a stack, and a lower outer member surrounding the lower portion of the stack and forming an intervening space or chamber and terminating short of the lower end of the stack, a ring hinged to the outer member at one side thereof and provided with a catch for detachably securing it to the outer member, said ring forming the lower portion of the outer wall of the said chamber or space, a diaphragm surrounding the stack and constituting the bottom of the said chamber and forming a light reflector, a globe supported by the said ring, a gas supply pipe passing through the stack of the casing and having branches extending to points beneath the said chamber, and approximately inverted U-shaped Bunsen tubes connected with the branches of the gas supply pipe and extending through the said chamber and provided within the same with air inlet apertures.

9. A lamp of the class described including a casing comprising upper and lower cylindrical sections, an outer tapered section surrounding the lower cylindrical section, a globe supporting ring connected with the outer section and provided with apertures, a diaphragm surrounding the said lower section and forming a bottom for the space or chamber between the lower section and the outer member of the casing, a gas supply pipe passing through the cylindrical sections and having branches extending beneath the

diaphragm, and Bunsen tubes passing through the lower section of the casing and having inner and outer legs, the outer legs being connected with the branches of the gas supply tube and passing through the space or chamber between the lower section and the outer member of the casing.

10. A lamp of the class described including a casing, a central vertical gas supply tube having outwardly extending branches, a plurality of approximately inverted U-shaped Bunsen tubes connected at their outer legs with the said branches, and a spreader plate mounted on the gas supply tube and arranged to space the inner legs of the Bunsen tubes.

11. A lamp of the class described includ-

ing a casing, a central vertical gas supply tube having outwardly extending branches, a plurality of approximately inverted U-shaped Bunsen tubes connected at their outer legs with the said branches, and a spreader plate mounted on the gas supply tube and arranged to space the inner legs of the Bunsen tubes, said spreader plate being also provided with an aperture arranged to receive a pilot lighter tube.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

SAMUEL W. HYATT.

Witnesses:

PEARLE C. McDONALD,

OMAR E. CLARK.