No. 654,343. Patented July 24, 1900.

R. M. DIXON.

LAMP

(Application filed Sept. 8, 1897.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

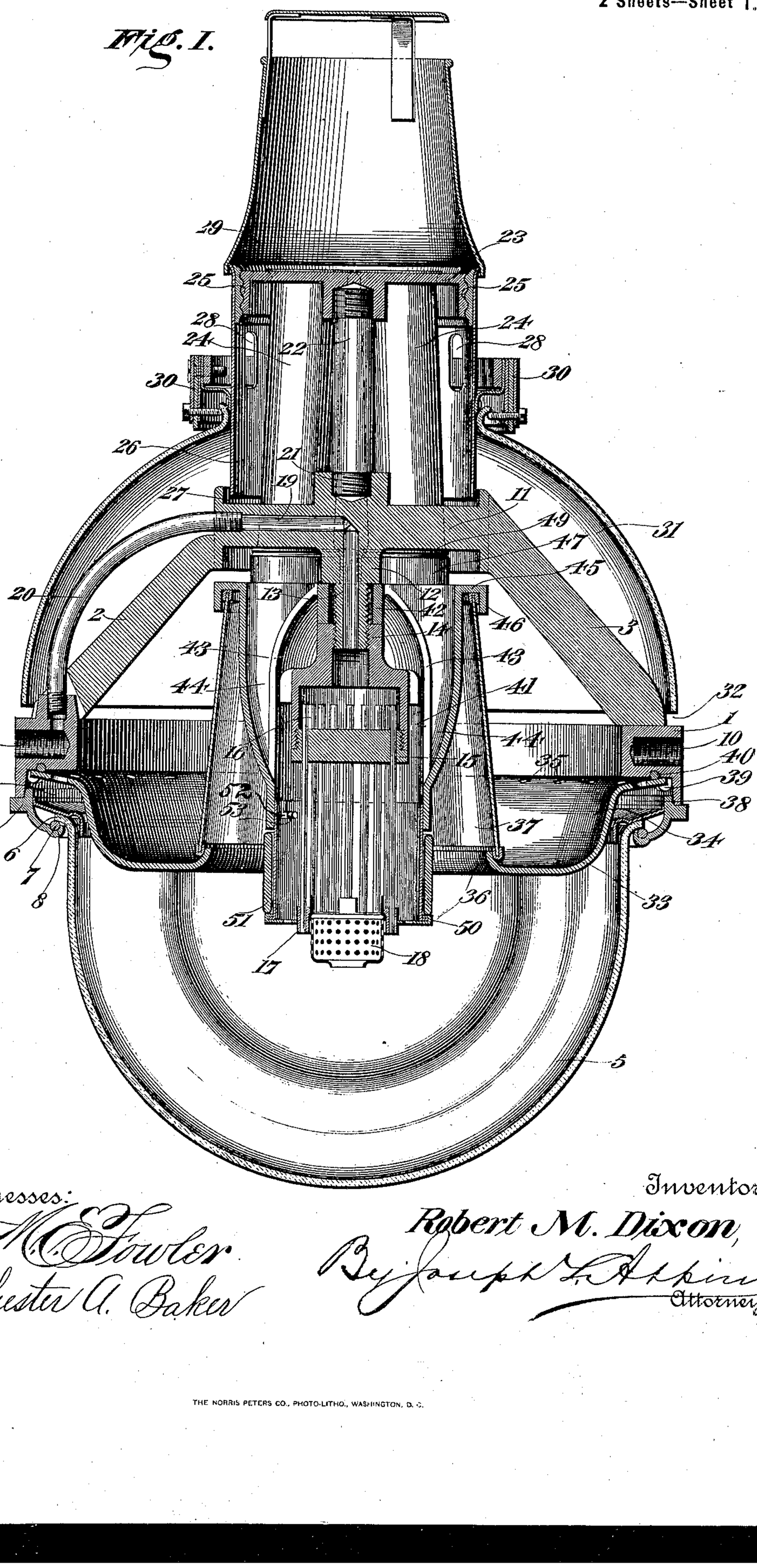

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Fig. II.

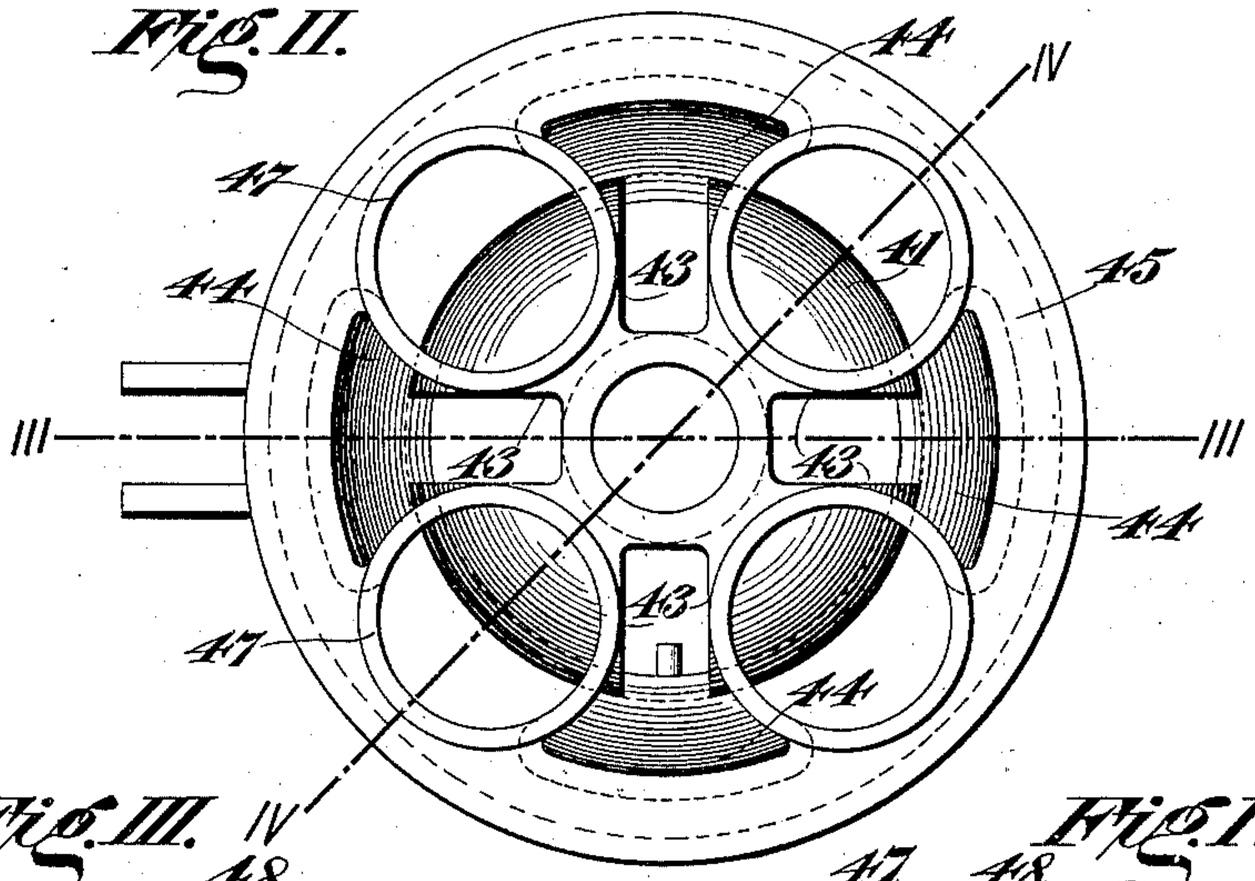


Fig. III.

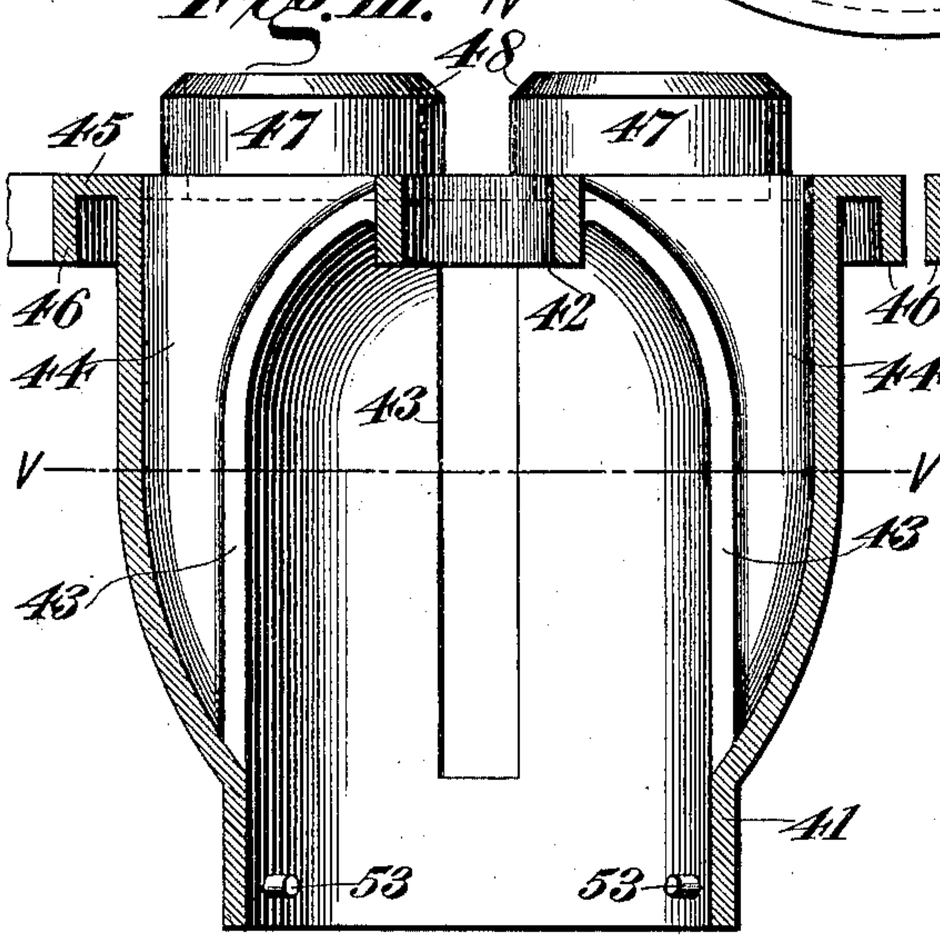


Fig. IV.

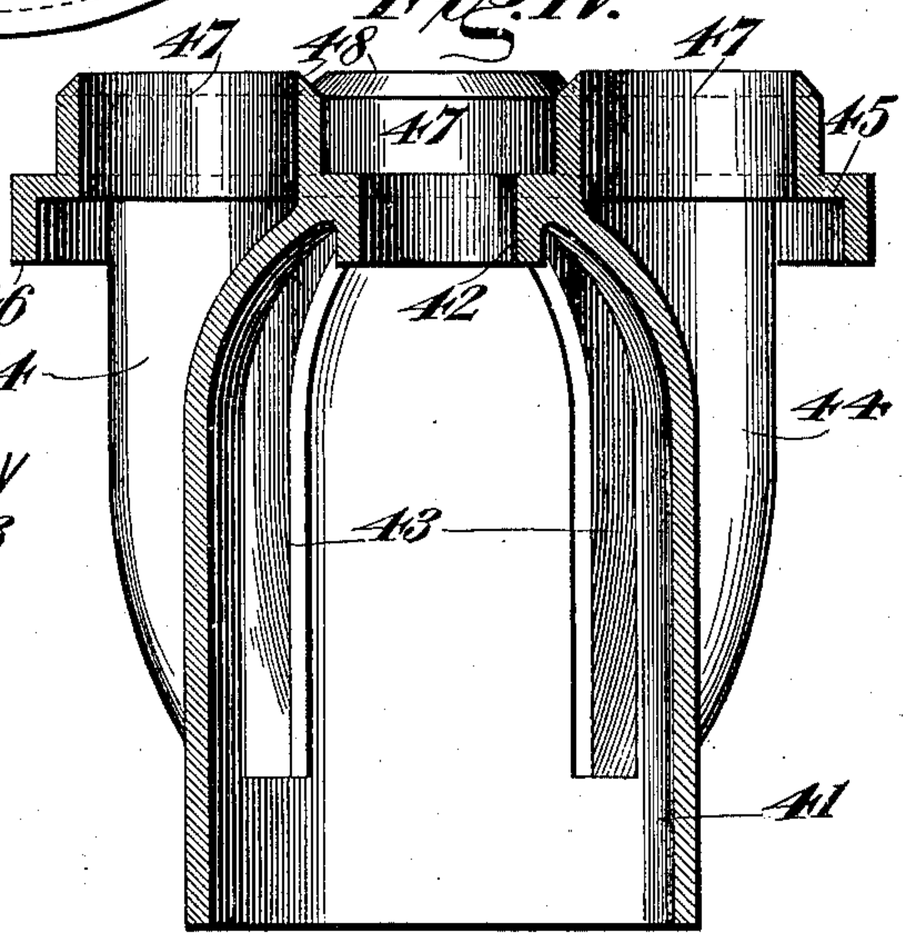
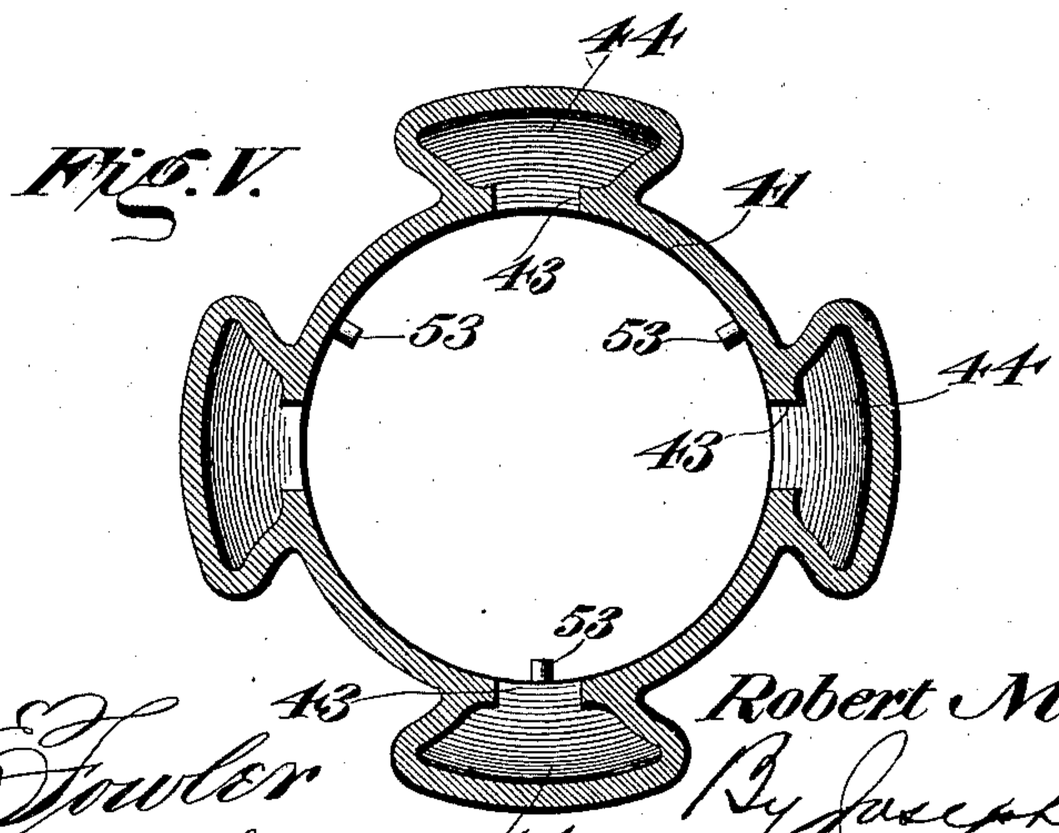


Fig. V.



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UNITED STATES PATENT OFFICE.

ROBERT MUNN DIXON, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO THE SAFETY CAR HEATING AND LIGHTING COMPANY, OF NEW JERSEY.

LAMP.

SPECIFICATION forming part of Letters Patent No. 654,343, dated July 24, 1900.

Application filed September 8, 1897. Serial No. 650,963. (No model.)

To all whom it may concern:

Be it known that I, ROBERT MUNN DIXON, of East Orange, in the county of Essex, State of New Jersey, have invented certain new and useful Improvements in Lamps, of which the following is a complete specification, reference being had to the accompanying drawings.

The object of my invention is to produce improvements in lamps of the inverted regenerative Argand burner type referred to in application Serial No. 614,285, filed December 3, 1896, whereby the extensive area of radiation of light from the flame of the lamp referred to in that application is secured without perforating or obstructing the wall of the mica chimney through which radiation through the top of the lamp proceeds.

In the accompanying drawings, Figure I is a central vertical sectional view of my lamp, partly in elevation. Fig. II is a top plan view of my center casting detached. Fig. III is a section on the line III III of Fig. II. Fig. IV is a section on the line IV IV of Fig. II. Fig. V is a section on the line V V of Fig. III.

Referring to the figures on the drawings, 1 indicates a main supporting metallic frame-piece, illustrated as of usual circular shape. It sustains, as upon its upper sides, the legs 2 and 3 of an open or spider frame. To its lower edge, as by the ordinary hinge, (not illustrated,) is movably secured in the ordinary manner a ring 4, which is adapted in practice to be sustained upon the side opposite its hinge against the edge of the frame 1 by any ordinary mechanism. (Not illustrated.) The ring carries a pendent transparent or glass globe 5, having an inverted edge 6, that upon a fillet 7 is supported on an inturned flange 8 of the ring 4.

The frame-piece 1 is designed to be supported in the usual manner by pendent bracket-arms, (not illustrated,) and is for that purpose provided with externally-opening internally-screw-threaded apertures 9 and 10, such as are ordinarily employed for the reception of bracket-arms. One of such apertures—as, for example, the one numbered 9—is designed to receive a bracket-support of tubular structure, which affords means of communication with a source of gas-supply. (Not illustrated.)

The legs 2 and 3 of the spider-frame sustain a headpiece 11, with which the legs are preferably cast in one piece. The headpiece 11 is provided with a tubular pendent projection 12, whose extremity, as indicated at 13, is preferably externally screw-threaded to receive the internal screw-threads of a gas-chamber 14. The lower end of the gas-chamber is closed, as by a threaded plug or disk 15, which carries burner-tubes 16 of well-known type, suitably spaced one from the other and whose lower ends are held in uniform fixed positions as by a ring 17.

In practice an everted flame issues from the lower ends of the burner-tubes, between which is carried the foraminous burner shell or spreader 18, whose office is well understood in the art.

The bore of the pendent projection 12 communicates, through a duct 19 in the headpiece 11, with a pipe 20, that in like manner through gas-tight joints communicates with the aperture 9 and through it, in the manner above specified, with the source of gas-supply. The head 11 of the spider-frame is provided with an internally-screw-threaded tubular stud 21, into which is screwed a flue-post 22, which carries upon its upper screw-threaded end a top ring 23, adapted to secure in place the upper end of a fourfold flue 24, whose lower end extends through the head 11 of the spider-frame, as illustrated in Fig. I. The ring 23 is screw-threaded, as indicated at 25, upon its outer periphery to adjustably support a chimney 26, whose lower edge extends toward or into a dish-shaped recess 27 in the head 11 of the spider-frame and which is provided with air slits or apertures 28 toward its upper end. An extension-chimney 29 surmounts the chimney 26 and affords means of final exit of the products of combustion from the lamp.

The chimney 26 is provided with means—as, for example, an externally-supported ring 30—whereby a transparent dome 31 is secured to the chimney, so as to be raised or depressed by the movement of the latter. The dome is

preferably of such extent as to provide between the ring 1 and its lower edge an annular air-supply inlet 32.

The presence of the air-supply inlet 32 is a preferable feature, as are the independent means of adjustment between the dome 31 and the chimney 26, the width of the air-inlet 32 and of the air-space 27 being by that means relatively adjustable. The particular form of construction illustrated, however, is not regarded as essential.

33 indicates an annular reflector or horizontally-disposed partition-plate. The partition-plate 33 is similar in form and function to the corresponding element specified in the application above referred to and is for similar reasons provided with an inclined zone 34, with apertures 35, and with an upturned annular inner edge 36 for the support of a transparent chimney 37. The zone 34 serves to define the inwardly-discharging annular air-chamber 38, to which air from the upper part of the lamp gains access through the apertures 35. The plate 33 is also provided upon its lower side with a polished reflecting-surface. The partition-plate 33 may be supported against the bottom of the frame 1, as by hooks 39, which press it against a yielding fillet 40, embedded in the bottom of the frame 1.

With few exceptions, and those determinable by comparison, the construction above specified is substantially that of the subject-matter of application Serial No. 614,185, above referred to.

The distinctive feature of my present invention consists in the employment of means for communicating air to the burner from above the transparent chimney 37 without in any wise obstructing its transparency or perforating its wall. To accomplish this object, I employ a member of peculiar structure, which for the want of a better term I denominate my "center casting," it being preferably made of cast metal and carried in the central part of the body of the lamp.

The details of the center casting, as specifically illustrated in Figs. II to V, inclusive, comprehend, as clearly brought out in Fig. IV, a body part 41, resembling in form a cupola, the head or dome of which is broken by a collar 42, by which, fitting around the threaded end 13 of the pendent projection 12 and sustained by the member 14, is supported the center casting. The wall of the body part 41, or "cupola" as it may be otherwise denominated, is pierced by a series of slits 43, which communicate, respectively, with downwardly-tapering lateral air-chambers 44, through which air is admitted from under the dome 31 to the burner that is surrounded by the center casting. Four chambers 44 are shown in the drawings by way of illustration.

The center casting is provided at its upper end with an annular plate or disk head 45, whose outer edge is provided with a downwardly-disposed flange 46, that in the assembled lamp overlaps the upper edge of the chimney 37 and holds it in place upon the upturned edge 36 of the plate 33.

Preferably arranged alternately with the chambers 44 I provide, through the plate 45, flue-apertures, defined by projecting flue-seats 47, whose upper edges are preferably beveled, as indicated at 48, to accommodate the flared ends 49 of the flues 24, so as to conveniently afford a suitably-close union between the flues and their seats.

In the lower end of the center casting I prefer to provide an air-controller which upon its lower flanged edge 50 supports an annular reflector 51 around the lower end of the burner.

The air-controller is preferably supported within the center casting, as by bayonet-joints, consisting of angular recesses 52 in the end wall of the controller and corresponding pins 53, extending radially from the inner wall of the center casting.

In operation gas being supplied to the interior of the chamber 14 issues from the lower ends of the tubes 16 and is there ignited to support the flame of combustion. Air enters freely through the air-inlets 32 and the slits 28 in the chimney 26. From the volume of air thus supplied within the dome 31 a portion passing through the apertures 35 enters the interior of the globe 5 underneath the burner. So much of the remaining portion of the volume of air as is required enters through the chambers 44 and is admitted to the burner from above, access to the interior of the burner being afforded in the usual manner through the spaces between the tubes 16.

The products of combustion from the burner pass upwardly from the burner with the flame around the reflector 51 and into the chimney 37. Confined between the chimney 37 and the center casting they finally gain egress through the flues 24 and are thence discharged through the extension-chimney 29. The air supplied from above the chimney, on the contrary, descends through the downwardly-tapered chambers 44 to the upper and inner surface of the flame, the outer surface of which is supplied with air mainly through the apertures 35 in the partition-plate 33.

By the arrangement of the air-chambers 44 the regenerative operation of the burner is improved, the incoming currents of air descending through the chambers 44 being thereby confined for a longer period in proximity to the heat derived from the ascending currents of the products of combustion.

The exterior surface of the center casting is of such a form as to constitute a desirable reflector for reflecting such light as strikes it and to increase the amount of useful reflecting-surface over existing lamps of the same general class.

What I claim is—

1. In a lamp, the combination with a frame of open-work construction, and a burner, of

means, surrounding the burner, for protecting it against injurious drafts, said means comprehending a chimney, in operative relation with the burner, said chimney being closed, except at the top and bottom, and means within the chimney for supplying air to the burner from above the chimney, substantially as set forth.

2. In a lamp, the combination with a frame of open-work construction and a burner, of means for protecting the burner against injurious drafts, said means comprehending a transparent dome above and a transparent bowl below the burner, and a transparent chimney within the dome and bowl, in operative relation with the burner, and means within the chimney of supplying air to the burner from above the chimney, substantially as set forth.

3. In a lamp of the inverted-burner type, the combination with a burner, and frame of open-work construction, of transparent inclosing members, a horizontal annular partition separating the said members, a transparent chimney surmounting the partition and means within the chimney for conveying air to the burner from above the same, substantially as set forth.

4. In a lamp of the inverted-burner type, the combination with its burner, of a member, closed, save at top and bottom, surmounting the burner, and provided throughout its longitudinal extent with means for the passage in opposite directions of air-currents and the currents of the products of combustion, whereby the regenerative action of the lamp is improved, substantially as set forth.

5. In a lamp, the combination with a frame, and a burner, of means for protecting the burner against injurious drafts, said means comprehending a chimney in operative relation with the burner, and a center casting within the chimney, adapted to separate incoming currents of air and outgoing products of combustion, substantially as set forth.

6. In a lamp, the combination with a frame, and a burner, of means for protecting the burner against injurious drafts, said means comprehending a chimney in operative relation with the burner, and a center casting within the chimney, said center casting being divided by passages extending vertically through the same and adapted to accommodate opposing currents of air and the products of combustion, and separate flues communicating with one set of passages and not with the other, substantially as set forth.

7. In a lamp of the inverted-burner type, the combination with a frame and a burner, of means for protecting the burner against injurious drafts, said means comprehending a chimney in operative relation with the burner, and a center casting within the chimney, said center casting being provided with chambers tapering toward the burner and with a narrow wall surrounding the burner, whereby a flame from the burner is discharged upwardly between the chimney and the wall of the center casting, and air through the tapering chambers is discharged against the upper surface of the flame, substantially as set forth.

8. In a lamp of the inverted-burner type, the combination with a frame and a burner, of means for protecting the burner against injurious drafts, said means comprehending a chimney in operative relation with the burner, and a center casting within the chimney, said center casting being provided with chambers tapering toward the burner and with a narrow wall surrounding the burner, whereby a flame from the burner is discharged upwardly between the chimney and the wall of the center casting, and air through the tapering chambers, is discharged against the upper surface of the flame, and an exterior reflecting-surface upon the center casting, substantially as set forth.

In testimony of all which I have hereunto subscribed my name.

ROBERT MUNN DIXON.

Witnesses:
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