

(No Model.)

2 Sheets—Sheet 1.

P. LUCAS.
LAMP BURNER.

No. 597,682.

Patented Jan. 18, 1898.

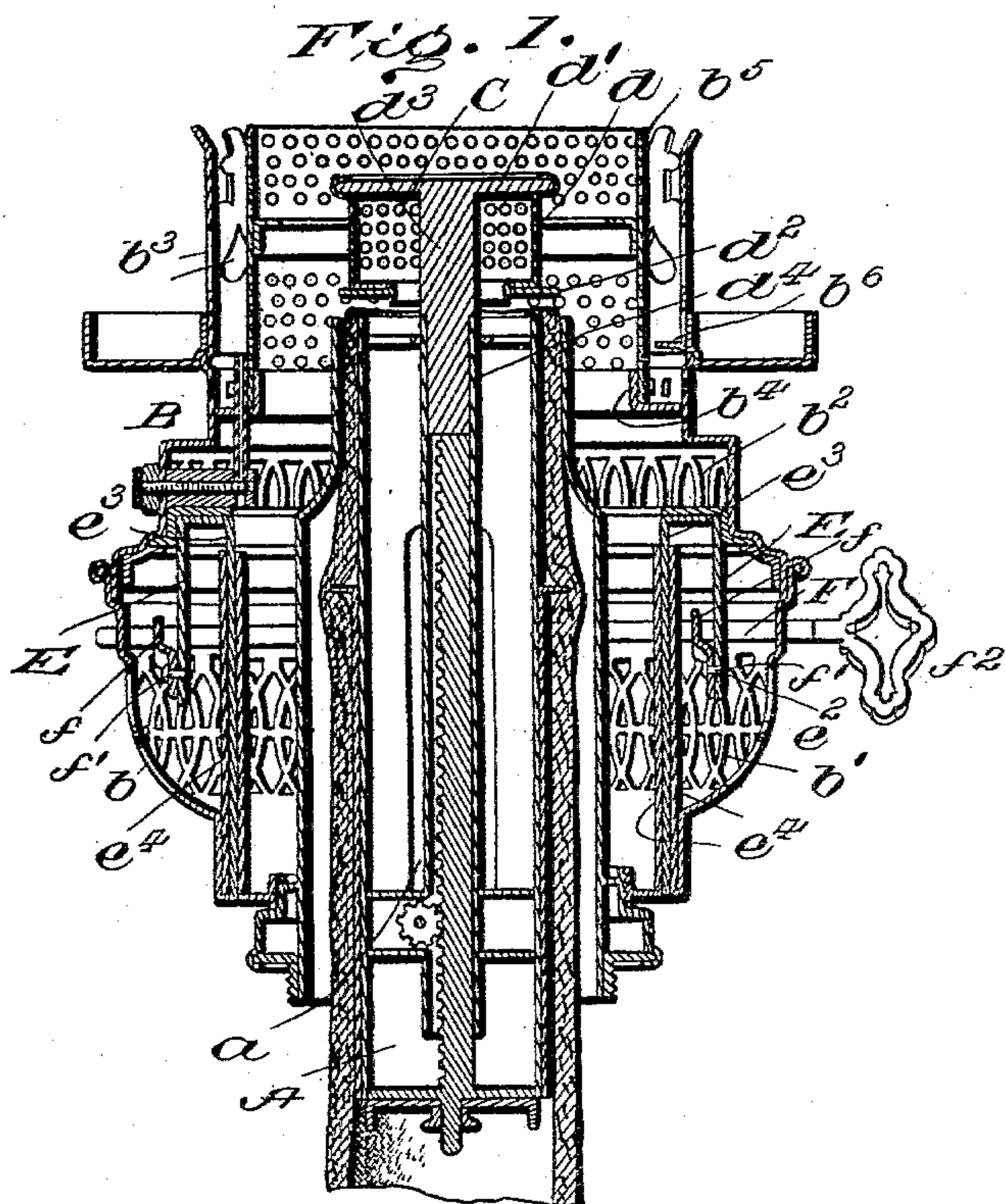
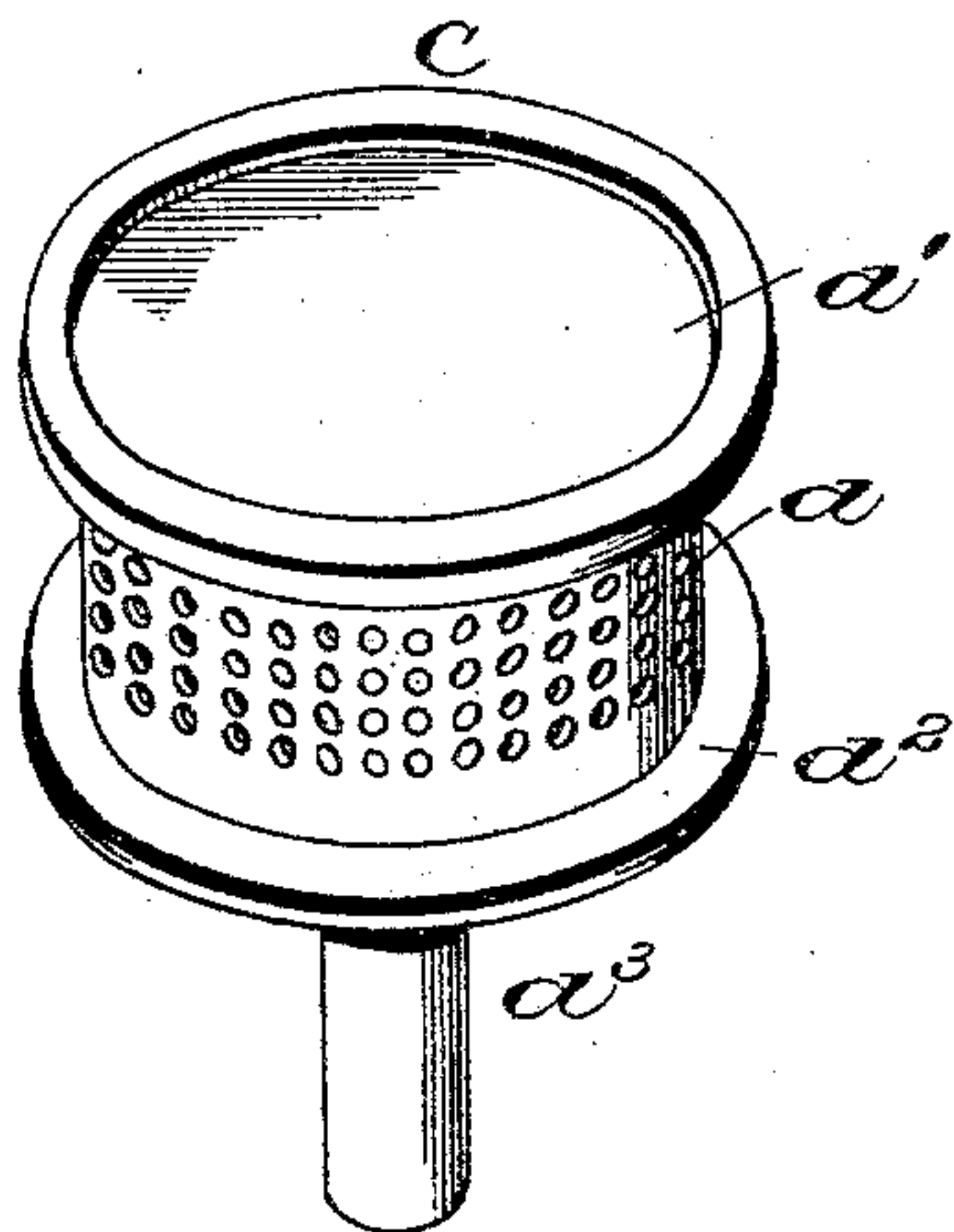


Fig. 2.



Witnesses

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Inventor

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by John W. Rice
Attorney.

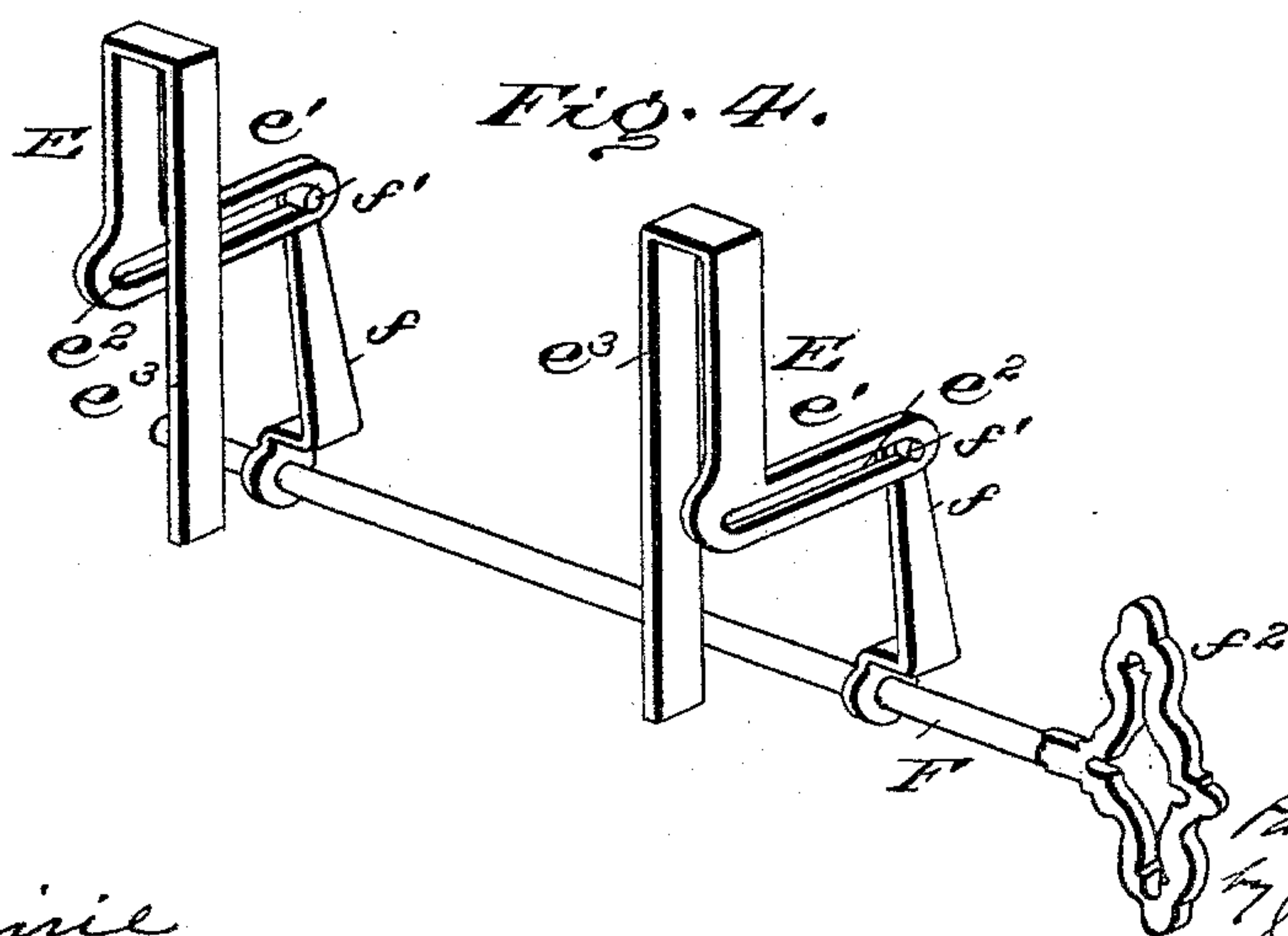
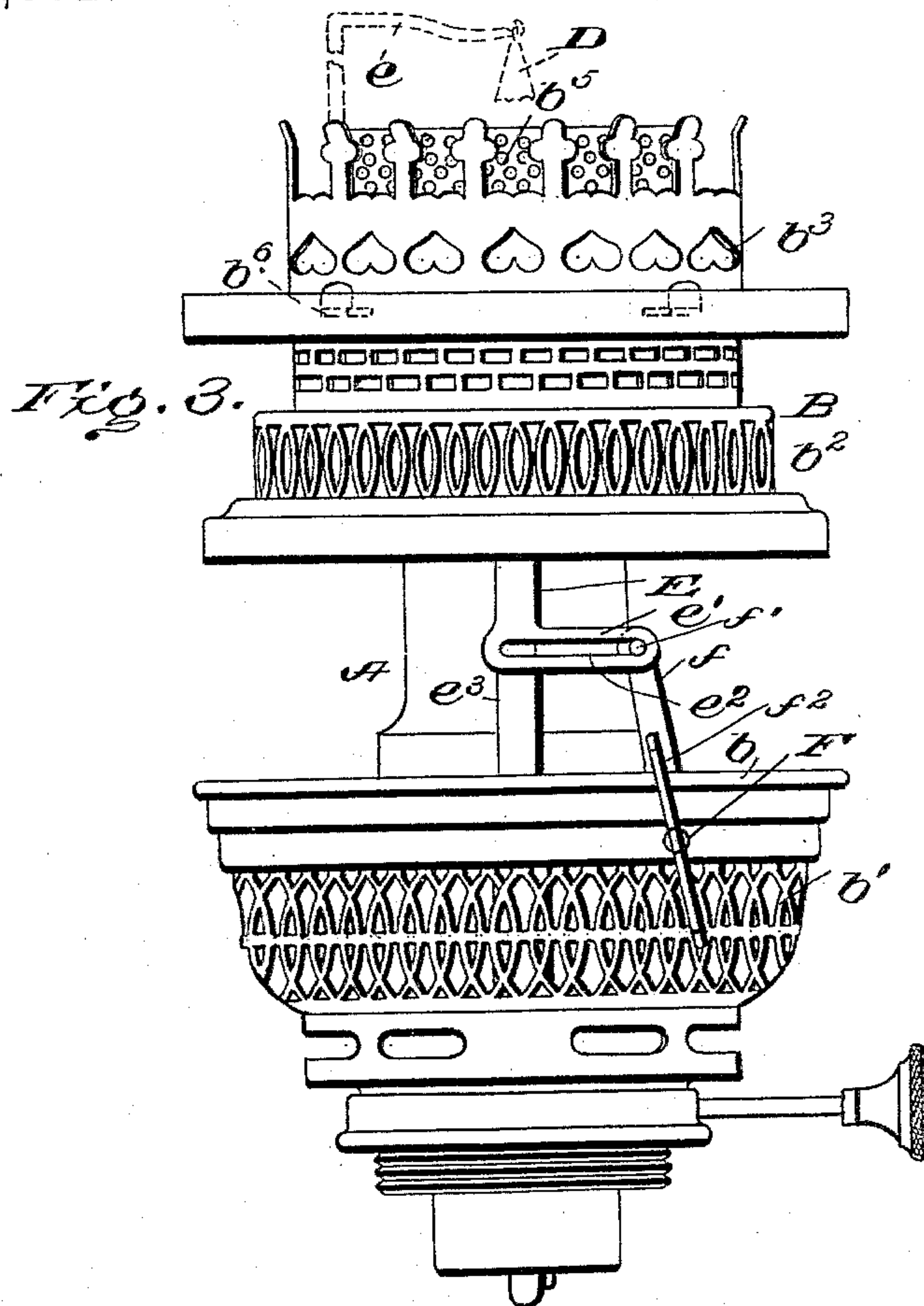
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2 Sheets—Sheet 2.

P. LUCAS.
LAMP BURNER.

No. 597,682.

Patented Jan. 18, 1898.



Witnesses

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UNITED STATES PATENT OFFICE.

PAUL LUCAS, OF FRIEDENAU-BERLIN, GERMANY, ASSIGNOR TO THE INCANDESCENT PETROLEUM LAMP COMPANY, OF WEST VIRGINIA.

LAMP-BURNER.

SPECIFICATION forming part of Letters Patent No. 597,682, dated January 18, 1898.

Application filed September 18, 1897. Serial No. 652,187. (No model.)

To all whom it may concern:

Be it known that I, PAUL LUCAS, a subject of the King of Prussia, residing at Friedenau-Berlin, Prussia, Germany, have invented certain new and useful Improvements in Lamp-Burners; 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.

This invention contemplates certain new and useful improvements in lamp-burners, having reference to burners for petroleum-lamps.

The primary object of the invention is to provide improved and highly-efficient means for producing a blue flame of intense heat developing no black and capable of generating a bright incandescent light by the aid of a well-known mantle suspended over the flame.

A further object is to provide improved means for raising and lowering the gallery and chimney.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal sectional view. Fig. 2 is an enlarged view of the gasifier. Fig. 3 is a view showing the gallery raised. Fig. 4 is a view in perspective with parts broken away, showing the gallery-elevating mechanism.

Referring to the drawings, A designates the wick-tube, which is composed of inner and outer concentric members, through which is formed an opening a for the admission of atmospheric air to the inside of the circular burner.

B is the gallery, and b is the gallery-support, upon which the former rests. The support is formed with perforations b' and the gallery with lower perforations b^2 and upper perforations b^3 , the latter being separated from the former by a flanged ring b^4 , to which is secured a cylinder b^5 , formed with numerous perforations. This ring b^4 surrounds the upper end of the wick-tube and serves to direct against the wick the outer air-current entering through the lower portion of the gallery and the support therefor. From what has

thus far been said it will be seen that in addition to the central air-current through the wick-tube outer air-currents are admitted through the perforated gallery and gallery-support and also through the perforated cylinder, which extends above the upper end of the wick-tube. To allow of the free admission of air above the flanged ring b^4 , stops b^6 are formed, on which rests the lamp-chimney, leaving space for the admission of air.

C is what I term a "gasifier." It consists of a perforated tubular body d , an upper imperforate cap d' , and a lower ring d^2 . From the cap d' depends a short rod d^3 , which fits in a tubular bearing d^4 , located centrally in wick-tube A. This gasifier is so supported that the lower ring thereof is held a short distance above and parallel with the upper end of the wick-tube and in such relation thereto that if the wick should be raised sufficiently far it will contact with the under side of ring d^2 . The best light is obtained with the wick raised about half the distance between the end of the wick-tube and the lower ring of the gasifier. I have found by actual practice that this gasifier accomplishes the best results. Air-currents rising within the wick-tube upon reaching the upper end thereof and entering into the open space below the ring d^2 will contact with the inside of the wick and feed the flame, and thus serve to develop the gas for combustion. The air passing up into the gasifier will strike against the cap d' and be directed out through the perforations of the body d . The cap acts as a spreader. In starting the lamp this cap becomes heated, and almost instantly sufficient heat is generated in the flame to cause the mantle to incandesce, which mantle is suspended from a rod e . In practice a lamp-chimney of considerable height is employed, whereby the draft of air will be one of great speed. The rapidly-rising current within the wick-tube is subdivided, a portion entering into the flame to produce the gas for combustion below the ring d^2 , and a portion entering the body of the gasifier and, being deflected by the cap, passes out through the perforations. In this way eddies of air are equally distributed to the flame, which will rise up around the cap in cone-like form and

will cause the incandescence of the mantle. When the wick is down, the flame will be white, as usual in petroleum-lamps; but this small flame will not cause any bad smell, as an abundant access of atmospheric air, inside and outside, aided and induced by the heat of combustion causes a complete combustion of the gas developed. On raising the wick about half-way up to the lower rim of the gasifier the flame will become entirely blue, this effect being obtained, primarily, by reducing the outlet or the air-current between the end of the wick and the under side of the ring of the gasifier, thereby intensifying said current, and, secondarily, by the eddies of air passing out through the perforations in the tubular body. In addition thereto at the outside of the wick strong and rapid currents of air pass through the gallery-support and also through the gallery, the currents through the latter being divided into upper and lower divisions, the upper currents being fed to the flame through the perforations in the cylinder, located above the upper end of the wick-tube. The several currents of air produced by the construction herein described combining with the flame on the interior and exterior serve to produce a blue flame of intense heat which will develop no black and heat the mantle to a bright incandescent light.

The second feature of my invention consists of simple means for raising and lowering the gallery. To the lower side thereof, at opposite points, I secure two depending arms *E E*, having lower right-angular branches *e'*, formed with longitudinal slots *e²*. Each of these arms is preferably formed from a bar *e³*, which is bent down parallel therewith and extended down into hollow guides *e⁴*, secured to and projecting upwardly in the gallery-support. A rock-shaft *F* is extended transversely across and supported by the gallery-support near one side thereof, and from this rock-shaft project two arms *f*, carrying at their outer ends pins *f'*, which project into the slots *e²*. One end *f²* of this rock-shaft is widened to form a key-like handle by which the rock-shaft can be turned. The turning of this rock-shaft will effect the raising and lowering of the gallery, the pins *f'* traveling from end to end of the slots of the right-angular arms. The gallery can be moved up and down in a straight line by the bars traveling in the guides *e³* and will be held in an elevated position when the pins *f'* are at the right-hand end of the slot, Fig. 4.

The operation of my burner is as follows: To light the lamp, the gallery is raised by turning the rock-shaft *F*. The height of the wick is then adjusted so that it is just above the top of the wick-tube, a light is applied to it, and the gallery is lowered to its original position. When the lamp is first lighted, a luminous flame is produced which is low at first, but rises without further raising of the wick as the parts of the lamp become heated,

rising around the gasifier. The flame will continue to rise until it reaches the top of the gasifier, and if the lamp be left in this condition it will rise even higher. The flame, however, being luminous, is incapable of incandescing the mantle, as it is not sufficiently hot, and, if it rose high enough, would deposit carbon upon the mantle. When the flame has about reached the top of the gasifier, the wick is raised suddenly by giving the wick-adjusting shaft a partial turn, and as this is done the luminous flame entirely disappears and the mantle becomes incandescent. The incandescence of the mantle is then due to combustion which takes place outside of the gasifier and at and near the perforations in the side thereof. The flame produced by this combustion is blue or colorless. This combustion is due to gas which rises from the wick, passes inside the gasifier *d*, is there mixed with air coming from the central draft-tube and which is heated by the gasifier, and then passes out through the perforations in the gasifier and encounters the air which enters through the perforations in the gallery and gallery-support. Close observation shows that when the blue or colorless flame about the gasifier is being produced there is, besides the combustion which takes place around the gasifier, a small flame at the wick and nearly or entirely upon the inner exposed surface thereof.

I claim as my invention—

1. In a lamp-burner having a central wick-tube, a perforated gallery and a perforated cylinder within said gallery surrounding the upper end of said wick-tube and extending above the gasifier, a gasifier located immediately above said wick-tube, and consisting of a perforated body, an upper imperforated cap and lower ring, the latter being parallel to the end of the wick-tube, as set forth.

2. The herein-described lamp-burner comprising a central wick-tube, a perforated gallery and gallery-support surrounding said tube, an upper perforated cylinder within said gallery extending from below the top of the wick-tube to above the gasifier, and a gasifier consisting of a perforated tubular body located centrally above and close to said wick-tube and having an upper cap and a lower ring, the latter being located parallel with the upper end of said wick-tube, substantially as set forth.

3. The herein-described lamp-burner comprising a central wick-tube, a gallery and support therefor having perforations therein, a flanged ring within said gallery, a perforated cylinder above said ring and extending above the gasifier, said ring surrounding the upper end of said wick-tube, a gasifier consisting of a perforated tubular body, and upper imperforate cap, and a ring on the lower end of said tubular body close to the wick-tube, a rod depending from said cap and a support in said wick-tube for said rod, substantially as set forth.

4. In a lamp-burner having a central wick-tube and perforated gallery extending above the gasifier, a gasifier consisting of a perforated cylinder within said gallery, a ring located above, close to, and parallel with the upper end of said wick-tube, a perforated tubular body above said ring to which the latter is secured, and a spreader, substantially as set forth.
5. A lamp-burner for incandescent petroleum-lamps having a central wick-tube and an outer perforated gallery and gallery-support, a perforated cylinder extending above the gasifier, the gasifier consisting of an upright cylinder supported within said wick-tube, and a ring located above, close to, and parallel with the upper end of said wick-tube, and a spreader with a mantle above and around said gasifier, whereby a bright incandescent light may be produced, substantially as set forth.
6. In a lamp-burner, a movable gallery carried by vertically-sliding uprights, said uprights being bent outwardly and downwardly at the top, the downward bends having slotted right-angular extensions, in combination with a rock-shaft carrying arms having pins working in the slots in said extensions, substantially as set forth.
7. In a lamp-burner, the combination of a wick-tube composed of inner and outer members, the inner member forming a draft-tube and having an opening for the admission of air; a gasifier above the wick-tube consisting of a tubular shell or thimble having a top plate, perforated sides, and a deflecting-ring below said top and perforated sides and located directly above and close to the top of the wick when the lamp is in operation, said gasifier having also an opening for the admission of air from the draft-tube and gas from

the wick; and a casing surrounding the wick-tube and gasifier and provided with openings for the admission of air into the space surrounding the wick-tube and gasifier, the construction and proportions of the parts being such that when the lamp is in operation combustible vapor generated by the flame at the top of the wick passes through the gasifier and the perforations therein, and burns with a blue or colorless flame on the outside of the gasifier, substantially as described.

8. In a lamp-burner, the combination, with wick and inner-draft tubes, of a gasifier above the wick-tube consisting of a tubular shell or thimble having a top plate, perforated sides, and a deflecting-ring at the bottom, located directly above and close to the top of the wick when the lamp is in operation, said gasifier having in its bottom an opening through which air from the draft-tube and gas from the wick may pass into the gasifier and through the perforations therein, and be burned with a blue or colorless flame on the outside of the gasifier, substantially as described.

9. The combination, with a central-draft wick-tube, of a hollow gasifier located close to the top of the wick-tube, and having an open lower end and openings for the exit of the vapor and air, the construction and proportion of the parts being such that a luminous flame can be produced extending from the wick upward and outside of the gasifier, or a blue or colorless flame produced projecting from the gasifier, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

PAUL LUCAS.

Witnesses:

WALDERMAR HAUPT,
HENRY HASPER.