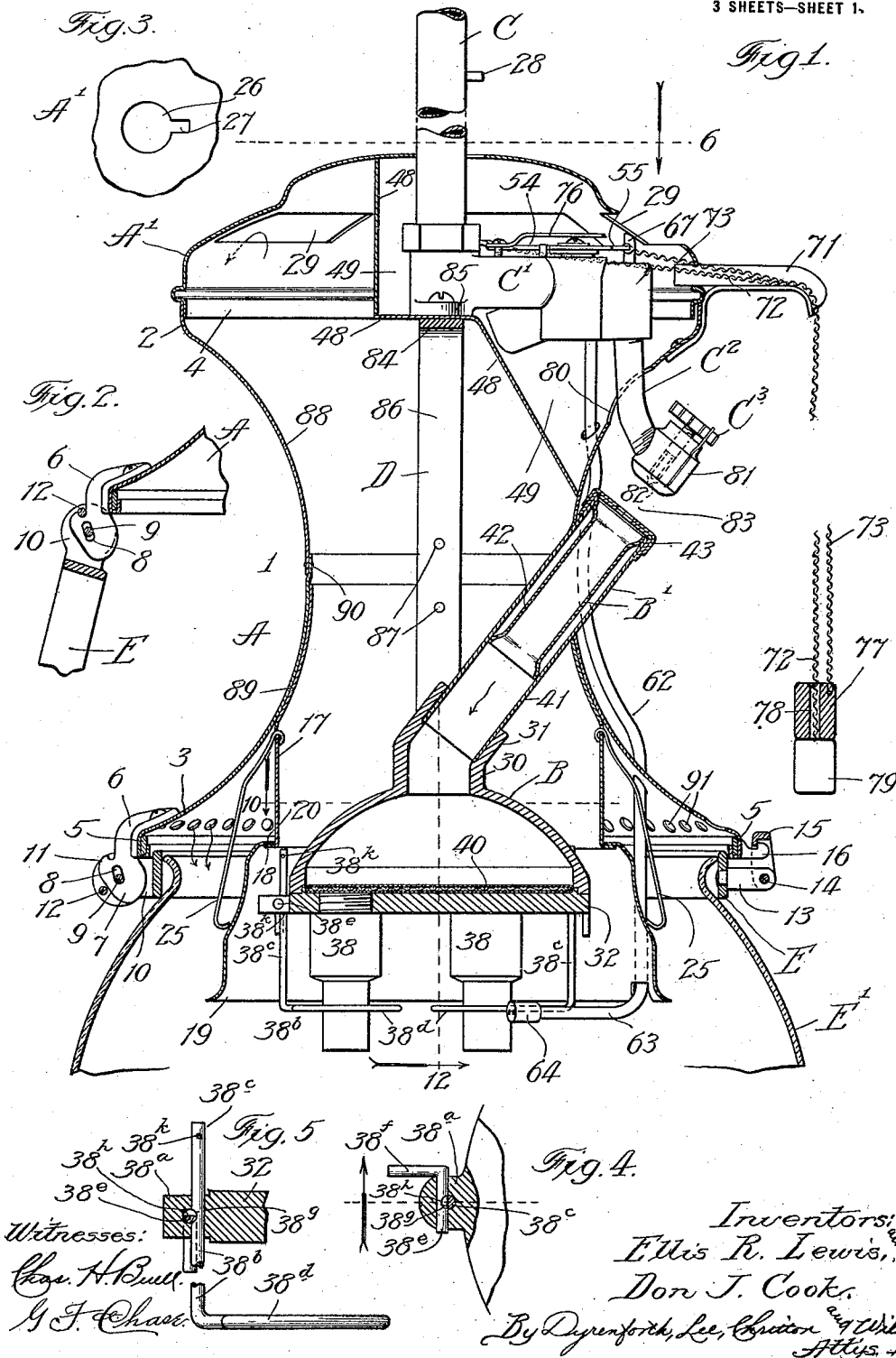


LAMP.

1,161,940.

3 SHEETS—SHEET 1.



E. R. LEWIS & D. J. COOK.

LAMP.

APPLICATION FILED JULY 21, 1911.

1,161,940.

Patented Nov. 30, 1915.

3 SHEETS—SHEET 2.

Fig. 6.

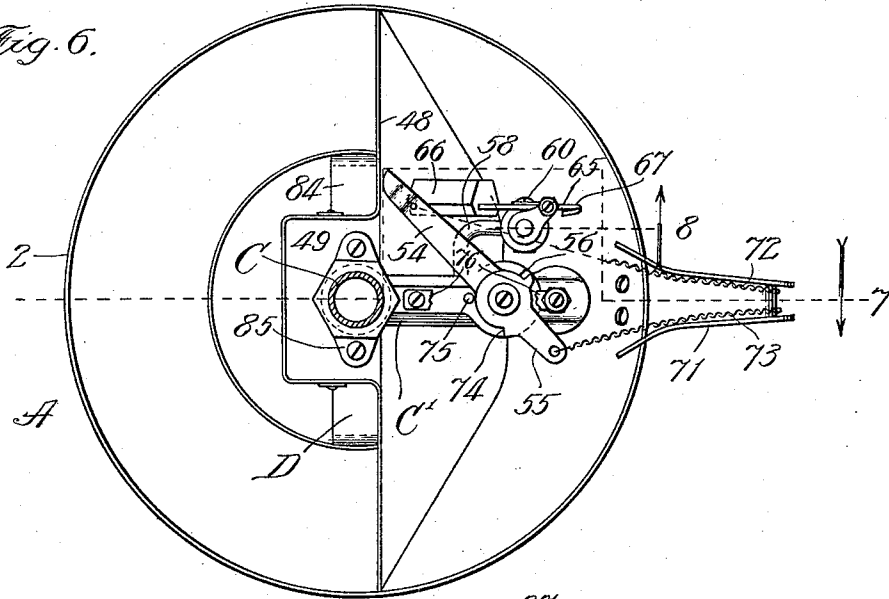


Fig. 7.

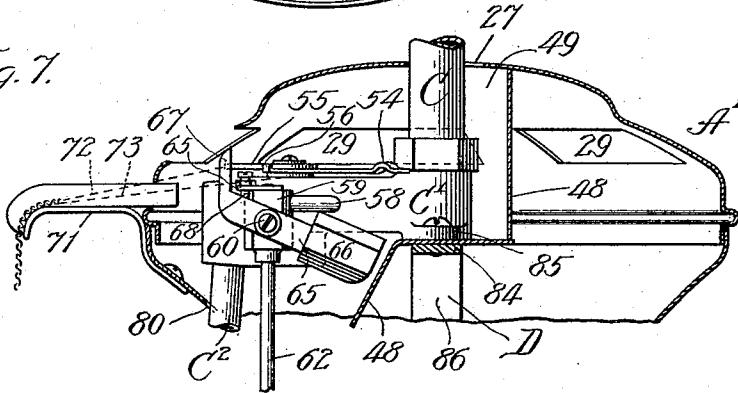
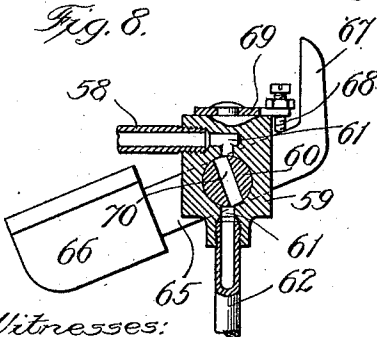


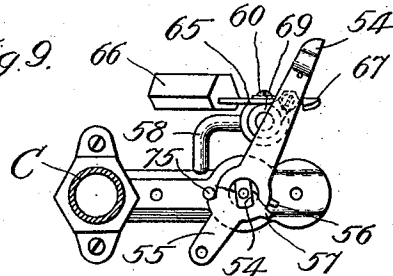
Fig. 8.



Witnesses:

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Fig. 9.



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1,161,940.

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3 SHEETS—SHEET 3.

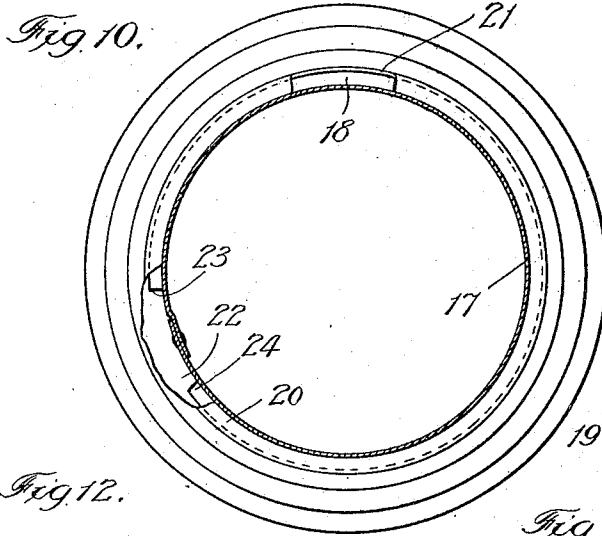
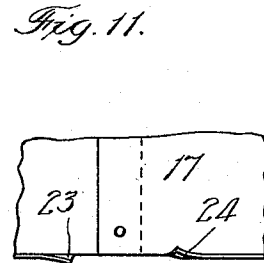
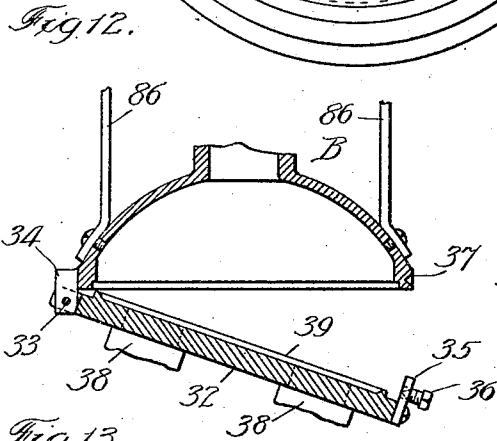
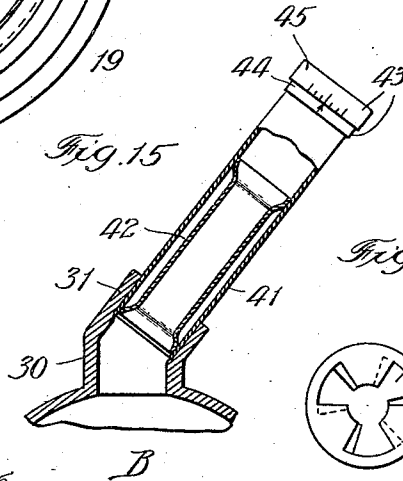
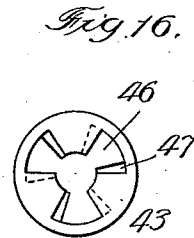
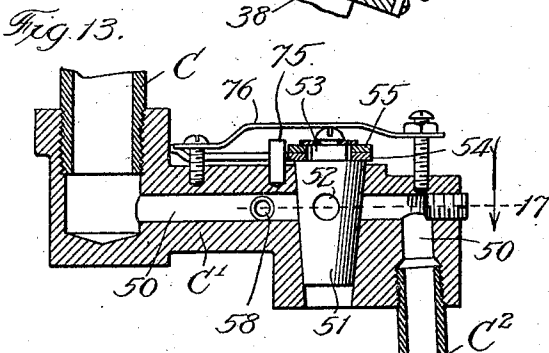
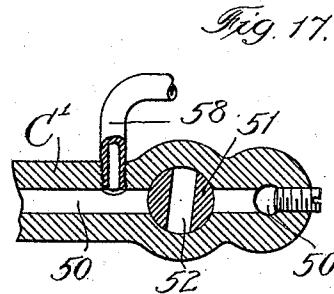


Fig. 14.

Witnesses:

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UNITED STATES PATENT OFFICE.

ELLIS R. LEWIS AND DON J. COOK, OF KALAMAZOO, MICHIGAN.

LAMP.

1,161,940.

Specification of Letters Patent.

Patented Nov. 30, 1915.

Application filed July 21, 1911. Serial No. 639,832.

To all whom it may concern:

Be it known that we, ELLIS R. LEWIS and DON J. COOK, citizens of the United States, residing at Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented a new and useful Lamp, of which the following is a specification.

Our invention relates particularly to gas lamps having a downturned burner or burners; and our primary object is to provide a lamp of the character indicated, of improved construction and operation.

Features of improvement relate to the mixer-chamber and mixer-tube; main and pilot valves and their operating means; and to other details of construction herein pointed out.

The invention is illustrated in its preferred embodiment in the accompanying drawings in which—

Figure 1 represents a broken sectional view of a lamp constructed in accordance with our invention; Fig. 2, a broken sectional view, showing a detail of the globe-support hinge, the globe-support being shown in the open position; Fig. 3, a broken plan view, showing the central portion of the top of the chimney; Fig. 4, a broken plan sectional view, showing a detail of a mantle-support carried by the burner-plate; Fig. 5 a broken section taken as indicated at line 5 of Fig. 4; Fig. 6, a plan section taken as indicated at line 6 of Fig. 1, but showing the chimney-top removed; Fig. 7, a broken section taken as indicated at line 7 of Fig. 6; Fig. 8, a broken section taken as indicated at line 8 of Fig. 6, this section showing the pilot valve; Fig. 9, a view similar to Fig. 6, but showing principally the valve-operating means; Fig. 10, a section taken as indicated at line 10 of Fig. 1, and showing a detail of the manner in which a detachable shield is connected with a fixed shield mounted in the lower portion of the chimney; Fig. 11, a broken elevational view of said fixed shield; Fig. 12, a broken sectional view of the mixer-chamber, showing the lower plate thereof open and the gauze-disk removed; Fig. 13, a broken sectional view exposing the main valve, the section being taken approximately at the section-indicating line 7 of Fig. 6, but viewed in a direction opposite to the arrow; Fig. 14, a view of the operating-disk of the needle-valve controlling the supply of gas passing to the mixer-tube; Fig. 15, a broken sec-

tional view of the mixer-chamber and mixer-tube, this view showing the mixer-tube reversed from the position shown in Fig. 1; Fig. 16, a view of the air register employed in connection with the mixer-tube; and Fig. 17, a broken section taken as indicated at the line 17 of Fig. 13.

In the form illustrated, the invention comprises a chimney A having a removable top A¹; a mixer-chamber B equipped with a removable mixer-tube B¹; a gas-supply pipe C from which the lamp is suspended, said pipe having a laterally turned branch-pipe C¹ at its lower end, comprising a casting which serves to support the main valve and pilot valve; a tube C² connected with the branch-pipe C¹ and equipped with a needle-valve C³ controlling an orifice from which gas is discharged into the upper end of the mixer-tube B¹; a chimney and mixer-chamber support D suspended from the member C¹; and a globe-support E connected with the lower end of the chimney and serving to support globe E¹.

In the form shown, the chimney A comprises a sheet-metal cylinder having a contracted central portion 1, an enlarged upper portion 2, and an enlarged lower portion 3. The upper portion 2 terminates in an up-turned flange which telescopically receives the flange 4 of the top A¹. The lower portion terminates in a downturned flange 5 which is equipped with a hinge-member 6 having a head 7 provided with a slot 8 which receives a pivot-pin 9 which is carried by pivot-lugs 10 with which the globe-support E is equipped at one side. The member 7 has an upturned hook 11 adapted to be engaged by a stud 12, carried by the outer portions of pivot lugs 10 of the globe-support. The globe-support is equipped at its opposite side with a lug 13 with which is connected, by means of a pivot 14, a loop-form fastening member or link 15 adapted to engage a catch or hook 16 with which the lower flange 5 of the chimney is equipped.

In the lower portion of the chimney A is supported a fixed shield 17 which is equipped at its lower end with an out-turned flange 18 (Figs. 1 and 10). Detachably connected with the fixed cylindrical shield 17 is a flaring or bell-shaped shield 19, whose upper end has an inturned flange 20, adapted to engage the out-turned flange 18.

To enable the shield 19 to be readily applied, its flange 20 is provided with a notch

or cut-away portion 21, and the flange 18 is provided with a notch or cut-away portion 22. At one side of the notch 22, the extremity of the flange is bent downwardly, as indicated at 23, and at the other side of the notch 22, the extremity of the flange is bent upwardly, as indicated at 24. This expedient enables the flange 20 of the shield 19 to be turned onto or off of the flange 18, at will, very much as a nut is turned onto or off a bolt. The shield 19 may be elevated with relation to the shield 17, and held in the elevated position by hooks 25 which are connected with the shield 17. This may be done when access to the mixer-chamber is desired.

The chimney-top A¹ has a central perforation 26 which receives the pipe C, and has a notch 27 adapted to register with the lateral stud 28 carried by the pipe C, when it is desired to remove the top. The top is also provided with perforations 29 through which the products of combustion may escape.

The mixer-chamber B preferably comprises an inverted half-spherical shell, or bell, with its upper portion equipped with a nipple or pipe-section 30 having an inclined portion 31. The bottom of the mixer-chamber, which constitutes the burner-support, comprises a flat plate, or metal-disk 32, which is connected at one edge, by a pivot 33 to lugs 34, with which the mixer-chamber is equipped (Fig. 12). The plate 32 is equipped at its opposite edge with an upwardly extending lug 35 in which works a pointed screw 36 adapted to enter the recess 37 with which the mixer-chamber is provided. The plate 32 has a series of perforations in which the burner-tips 38 are secured. The upper side of the plate 32 is recessed as indicated at 39 to receive a removable disk-form wire gauze 40, which covers all of the outlets of the burner-tips. When desired, the plate 32 may be swung downwardly to permit the burner gauze to be removed and cleansed or replaced by another. The plate 32 has peripheral lugs 38^a (one shown in Figs. 4 and 5), one corresponding with each burner-tip and having a vertical perforation which receives the stem of a mantle-support 38^b. Each mantle-support comprises a vertical rod 38^c, having a laterally turned lower end formed into a ring 38^d which encircles the corresponding burner-tip. The stem 38^c is received in the vertical perforation of the lug 38^b, in which it is slidable and rotatable. A transverse perforation intersects said vertical perforation partially and receives a wire key or lock 38^e which has an angular arm or handle 38^f. The member 38^e is provided with a notch or half-circular groove 38^g, and the member 38^e is provided with a half-circular groove 38^h. The groove 38^g is complementary to the horizontal perforation in the lug 38^b,

and the groove 38^h is complementary to the vertical perforation in said lug, so that the mantle-support may be lowered when the member 38^e is in the position shown in Fig. 4, and is locked in the elevated position when the member 38^e is in the position shown in Fig. 5, *i. e.*, with the handle 38^f turned down. The stem 38^c is provided with stop-pins 38^k, which limit the vertical movement. When desired, the mantle-support may be unlocked, lowered, and rotated to swing the mantle (carried by the ring 38^d) away from the burner-tip, to enable the flame to be viewed or the burner-tip to be cleansed.

The mixer-tube B preferably comprises a cylinder 41 in which is located a longitudinally adjustable induction tube 42 which is adapted to vary the amount of air drawn into the mixer-chamber, depending upon the position of the inner tube 42 with relation to the gas orifice controlled by the needle-valve C³. The closer the tube 42 is placed with relation to said gas orifice (within proper limits), the greater will be the velocity of the stream of gas passing into the mixer-tube. Hence, the position of the inner tube with relation to the gas orifice affords a valuable expedient for adapting the lamp to varying gas-pressures, which are encountered in different municipalities.

The tube 42 has bell-shaped ends, located wholly within the tube 41, and may be adjusted longitudinally therein, frictional engagement being depended upon to hold the inner tube in proper position when once adjusted. The outer tube 41 is removably inserted in the pipe-section or nipple 30 of the mixer-chamber B. In Fig. 1, the inner tube 42 is shown located at the outer or upper end of the tube 41, being close to the gas orifice controlled by valve C³. In Fig. 15, the tube 41 is shown reversed in relation to the mixer-chamber, thus locating the inner tube 42 at a greater distance from the gas orifice. It thus appears that the location of the inner tube with relation to the gas orifice may be changed either by adjustment within the outer tube, or by reversal of the outer tube. The outer tube is equipped with a removable cap or register 43. This comprises, in fact, an inner cap 44 and an outer cap 45 whose disk portions are equipped with segmental perforations 46 and 47 respectively, as shown in Fig. 14, so that the amount of air admitted to the mixer-chamber may be further controlled by means of the register. As shown in Fig. 13, graduations are provided on the caps 44 and 45 to facilitate adjustment of the air shutter.

The upper portion of the chimney A is divided by a wall 48 forming a chamber 49 in one side of the chimney and beneath the chimney top A¹, and adapted to accommodate the valve-mechanism. The casting C¹ is located in the chamber 49. It has a hori-

zontal passage 50 which communicates with the pipe C, as shown in Fig. 13. The main valve 51 controls the passage 50, and is in the form of a stop-cock having a transverse perforation 52 adapted to register with the passage 50. The valve 51 has a stem 53 at its upper end upon which is loosely pivoted an arm 54 (Figs. 6, 9 and 13), adapted to engage the actuating-arm of the pilot valve to "flash" the pilot-light at the instant the main valve is opened to supply gas to the burners. The extreme upper end of the stem 53 is squared, and upon the squared portion is fixed an arm 55 pivoted to serve in closing the valve 51. The pivot portion of the arm 54 is equipped with an upturned lug 56 adapted to engage a lug 57 with which the hub portion of the arm 55 is equipped. Thus, when the arm 54 is actuated in one direction, it will serve to actuate the arm 55 and open the valve 51.

Communicating with the passage 50 of the casting C¹ between the pipe C and the valve 51 is a tube 58 which extends laterally and carries a valve-casing 59 in which is journaled a horizontally disposed valve 60, which controls the pilot-burner. The valve 60 controls a passage 61 in the valve-casing 59. The tube 58 communicates with the passage 61; and a tube 62 leads from the lower end of the passage 61, passing through the walls of the chimney at the enlarged portions thereof. The lower end of the tube 62 is turned laterally inwardly, as indicated at 63 in Fig. 1, and equipped with a tip 64 which serves as the pilot-burner.

The valve 60 has its stem equipped with a fixedly secured lever 65 adapted to work in a vertical plane. The lever 65 is equipped at one end with a weight 66 and has the opposite end turned upwardly to afford a cam-arm 67, which is adapted to be engaged by the loosely mounted arm 54. A set-screw 68 serves as a stop for the arm 65, said set-screw being carried by a plate 69 secured on the top of the valve-casing 59. The valve 60 is provided with a transverse passage 70 which registers only slightly with the passage 61 when the valve 60 is in the closed position shown in Fig. 6, so that the light will be maintained at the pilot-burner.

The upper portion of the chimney A is equipped with a laterally projecting chain-guide 71 over which pass chains 72 and 73 connected, respectively, with the arms 54 and 55. At the base of the arm 55 is a shoulder 74 adapted to engage a stud 75 carried by the casting C¹, when the main valve 51 is in the open position. A spring 76 is provided to maintain the plug-valve 51 properly seated.

The closing chain 73 has connected therewith a ball or knob 77 provided with a vertical passage 78 through which the opening-

chain 72 extends. The chain 72 is equipped with a knob or ball 79. The chains 72 and 73 are of such length that the ball or handle 77 will be brought substantially down against the knob 79 when the main valve is in the closed position. When the chain 72 is pulled to open the valve, the knob 79 will depend some distance below the knob 77, thus affording a visual indication that the gas is turned on.

As appears from Fig. 13, the tube C² communicates with the passage 50 of the casting C¹, and depends some distance below said casting, through a perforation 80 in the enlargement of the casing or chimney wall. The lower end of the tube C² is equipped with a member 81 in which the needle-valve C³ is mounted. The needle-valve controls a gas orifice 82 which is separated from the upper end of the mixer-tube B¹ by a space 83, as shown in Fig. 1.

The member D which supports the mixer-chamber B comprises a U-shaped steel bar having its web-portion 84 connected with lugs 85 with which the casting C¹ is equipped beneath the lower end of the pipe C. The member D has downturned arms 86 whose lower ends are secured to the mixer-chamber, as shown in Fig. 12. The intermediate portions of the arms 86, are connected, as by screws or rivets 87, with the contracted intermediate portion of the chimney or body A. Said body preferably comprises an upper section 88 and a lower section 89, which are united at 90. The curved portions of the walls of the members 88 and 89 are complementary to each other, so that the walls of the chimney are concaved inwardly in vertical section, as clearly shown in Fig. 1. The mixer-chamber B is normally disposed with its lower portion projecting somewhat beneath the stationary shield 17, so that the burners 38 are grouped within the lower portion of the bell-shaped shield or hood 19. The outwardly flaring lower portion of the chimney is provided with perforations 91 serving to admit air to the burners. It will be noted that air admitted to the burners through openings 91 will be deflected by the shield 19, so that the burners will not be subject to direct action of the air currents.

The operation will be readily understood from the foregoing description.

A light is always maintained at the pilot burner 64. When it is desired to light the lamp, all that is necessary is to pull the chain 72 through the medium of the pendant 79. In this operation, the loosely mounted arm 54 is swung from the position shown in Fig. 6 and caused to engage the upturned arm 67 of the pilot-valve lever, thereby opening the pilot-valve for an instant. In the same operation the upturned lug 56 of the arm 54 engages the shoulder 57 of the

arm 55, thereby throwing the arm 55 to the position shown in Fig. 9, in which position the main valve 51 is open. Upon release of the pendant 79, the weight 66 operates to close the pilot-valve, returning the arm 54 to the position shown in Fig. 9, but leaving the main valve in the open position. When it is desired to extinguish the light, the chain 73 is pulled through the medium of the pendant 77, thereby moving the arm 55 from the position shown in Fig. 9 to the position shown in Fig. 6. In this movement, the shoulder 57 engages the lug 56 and throws the arm 54 back to its initial position, as shown in Fig. 6.

The foregoing detailed description has been given for clearness of understanding only, and no undue limitation should be therefrom understood, but the appended claims should be construed as broadly as permissible in view of the prior art.

What we regard as new and desire to secure by Letters Patent is—

1. In a lamp, the combination of a chimney having a chamber in one side of its upper portion, a gas-supply pipe depending into said chamber and equipped with a member having a substantially horizontal passage therein, a vertically-disposed valve journaled in said member and controlling said passage, a chain-guide extending from said chamber and projecting laterally from the chimney, a chain extending through said guide and serving to actuate said valve, a mixer-chamber provided with a mixer-tube extending through a side of the chimney, and a tube depending from said member and equipped with an orifice presented to said mixer-tube.

2. In a lamp, the combination of a chimney having a chamber in one side of its upper portion, a gas-supply pipe depending into said chamber and having a laterally turned branch, a main valve located in said

chamber and controlling said branch, a pilot-valve located in said chamber, a chain-guide projecting laterally from said chamber, chains extending into said chamber and depending from said chain-guide, valve-actuating means in said chamber with which said chains are connected, a tube depending from said branch and provided with an inwardly directed orifice at its lower end, a mixer-chamber in the lower portion of said chimney and a mixer-tube extending upwardly and outwardly from said mixer-chamber through said chimney and having its upper end presented to said orifice.

3. In a lamp, the combination of a chimney having a reduced central portion, a mixer-chamber supported in the lower portion of said chimney and equipped with an inclined mixer-tube projecting through said reduced portion of said chimney, a chamber in one side of the upper portion of said chimney, a gas-supply pipe depending into said chamber and equipped with a lateral branch, a pilot-burner-tube connected with said branch, valves in said chamber controlling said branch and said pilot-burner-tube, actuating means for said valves located in said chamber, and chains connected with said valve-actuating means.

4. In a lamp, the combination of a chimney, a mixer-chamber in the lower portion thereof, a mixer-tube connected with the upper portion of said mixer-chamber, a hinged bottom-plate for said mixer-chamber equipped with burner-tips, and a disk-form gauze supported on said bottom-plate and guarding the passages leading to the burner-tips.

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DON J. COOK.

In presence of—
F. G. STANLEY,
GENEVIEVE LICH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents Washington, D. C."