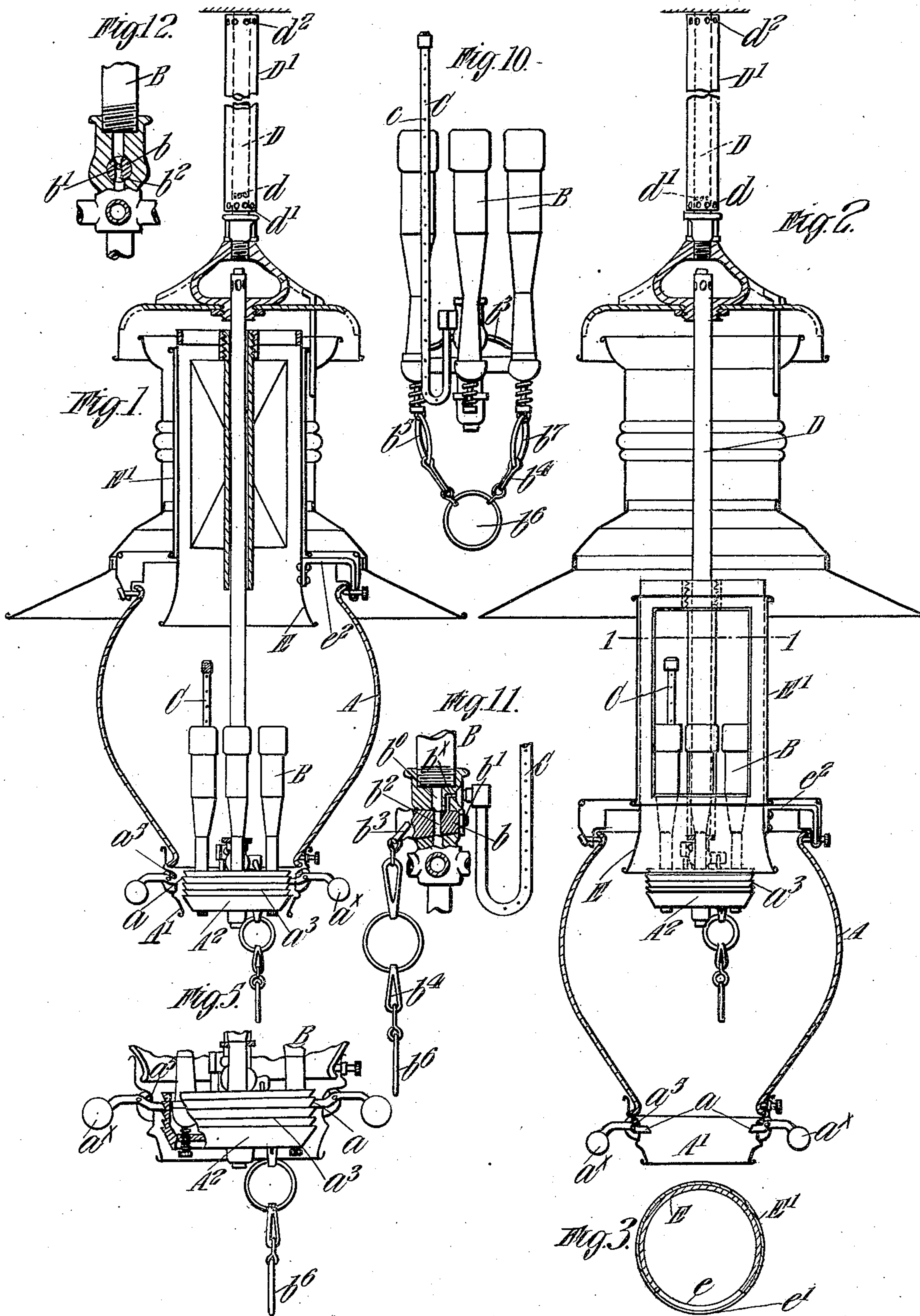


C. W. HARRISON.
INCANDESCENT GAS LAMP.
APPLICATION FILED JUNE 15, 1907.

934,309.

Patented Sept. 14, 1909.

2 SHEETS—SHEET 1.



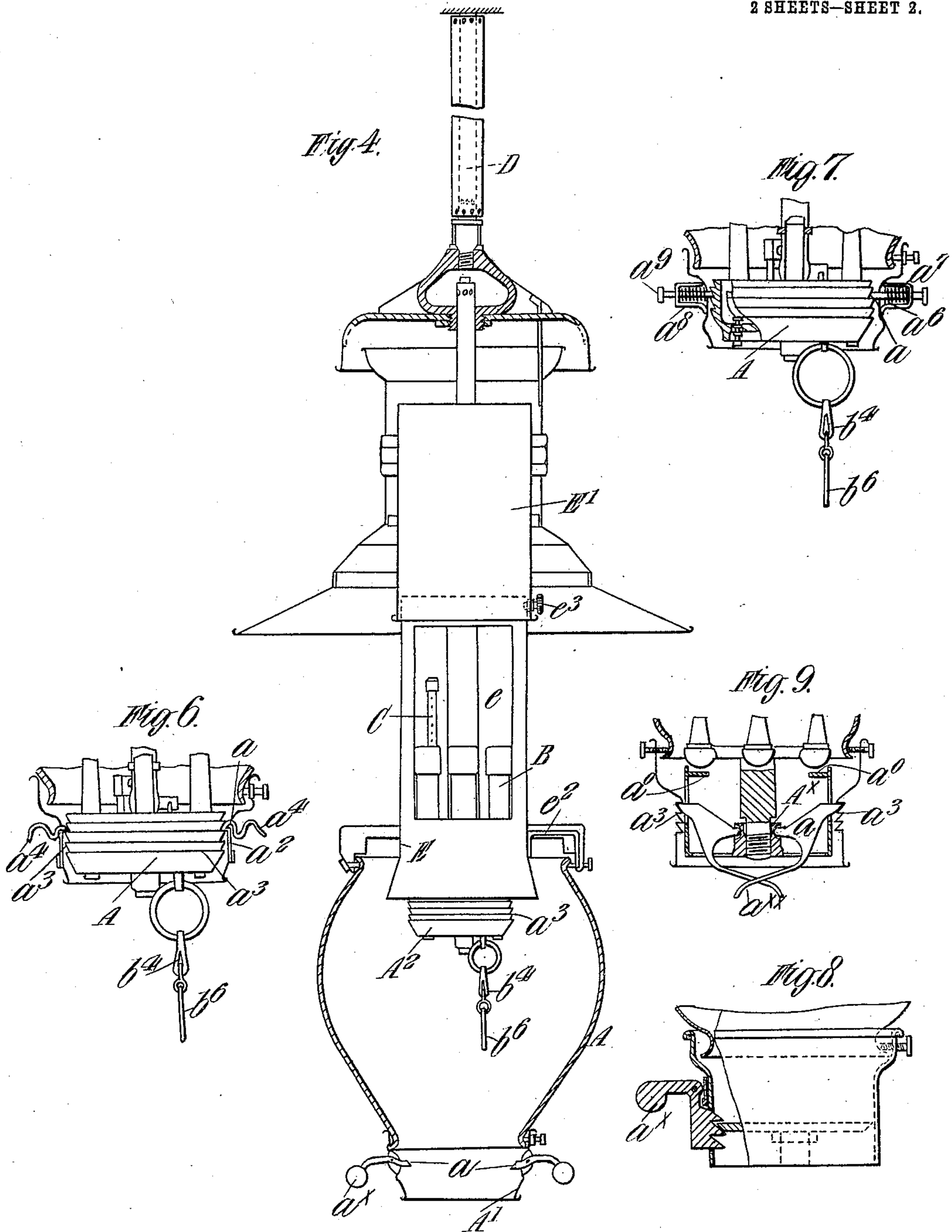
Witnesses:
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Inventor,
Clark May Harrison
By Knight attys.

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UNITED STATES PATENT OFFICE.

CLARK WAY HARRISON, OF LONDON, ENGLAND.

INCANDESCENT GAS-LAMP.

934,309.

Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed June 15, 1907. Serial No. 379,228.

To all whom it may concern:

Be it known that I, CLARK WAY HARRISON, a citizen of the United States of America, residing at 96 Middlesex street, in the city and county of London, England, have invented certain new and useful Improvements Relating to Incandescence Gas-Lamps, of which the following is a specification.

This invention relates to incandescence gas lamps and has particular reference to lamps that are exposed to drafts, wind, and variations of atmospheric temperature. Lamps of this type comprise a globe normally inclosing the mantles and adapted to be moved downwardly from its normal position for cleaning purposes or for inspection and repair of the mantles, the latter being prevented from becoming injured by wind or drafts of air when the globe is lowered from its inclosing position by means of a tubular draft screen having a door therein to permit of ready access to the mantles when it is desired to inspect or replace the same. The aforesaid door has in some cases been hinged to the draft screen, or adapted to slide in guides after the manner of a shutter, but such arrangements are liable to become defective owing to warping or distortion of the screen and door resulting from the heating of the same when the burners are in use.

The chief objects of this invention are to provide an improved construction of screen whereby the above defects are obviated; to provide improved means for enabling the globe when raised from its lowered position to become automatically retained in its raised or normal position around the burners, and to provide improved means for readily indicating the position of the gas plug relatively to gas passages leading to the main burners and a by-pass or pilot tube.

The gas supply pipe leading from the ceiling, wall or other support to the lamp is usually exposed to the air with the result that the gas supply pipes of lamps situated in exposed positions are liable to become obstructed in cold weather by the condensation of the moisture contained in the gas, and the ultimate formation of hoar-frost or ice in said pipes, and a further object of this invention is to prevent the formation of ice or hoar-frost.

According to this invention the lamp is provided with improved means whereby the movable portion comprising the globe and

gallery can be readily detached or unlocked from the stationary portion of the lamp when the globe is to be lowered, said means permitting the globe and its gallery to be automatically reengaged with or locked to the stationary portion of the lamp as the globe is returned to its normal or raised position. This improved means is preferably adapted to work automatically by making it in the form of one or more gravity-controlled pawls, though resilient metal springs can be used for the purpose. The latter when springing back into position to hold the movable portion of the lamp are liable to jar and injure the mantles. The gravity-controlled pawl however works with such ease as not to cause any injury to the mantles. In order to overcome the variations in the length of globes I also provide means permitting the globe and its gallery to be automatically reengaged with or locked to one or other of a series of suitably shaped grooves or ledges as the globe is returned to its normal or raised position. For this purpose the aforesaid gallery may be provided with one or more pawls or bolts adapted to engage with said grooves or ledges, the latter being preferably of buttress or ratchet shape in cross section and formed on the outer surface of a metal ring or cup secured to or forming part of the stationary portion of the lamp, so that as the globe is raised from its lowered position, the pawl or bolt will ride over the grooves or ledges and when the globe is sufficiently raised and released, the pawl will engage with one or other of said buttress or ratchet shaped grooves or ledges and thus automatically retain the globe in its raised position, and also automatically adjust the globe to its correct position; such globes vary in length and such variations are thus automatically equalized.

For the purpose of shielding the mantles when the globe is lowered and for readily gaining access to said mantles, the lamp is provided with a tubular draft screen which is provided with an aperture of suitable dimensions and is surrounded by a cylinder or tubular jacket having a corresponding aperture, so that by angularly displacing said tubular jacket the two apertures may be made to coincide or not as required, or the said tubular jacket may be unprovided with the aperture, in which case the aperture in the tubular draft screen would be exposed

by sliding or longitudinally moving the said tubular jacket instead of angularly displacing it.

The means for lighting the burners from outside the globe, lantern, or similar transparent casing are of the kind in which a by-pass tube is formed with a series of holes throughout a considerable portion of its length for enabling gas to escape in the form of small jets so that when the gas escaping through the lowermost jet is ignited, the flame will leap from one jet to another until it reaches the uppermost jet or jets whereupon it will cause the ignition of the gas at the mouth of the burners, the main conical plug of the gas cock being provided with a passage so situated that when the gas is partly turned on to the burners it also passes to the by-pass tube and when entirely turned on to the burners it is cut off from said by-pass tube. In combination with these means for regulating the gas supply to the burners and by-pass tube, and for igniting the gas issuing therefrom, I provide a chain or other flexible connection attached to the actuating handle of the gas plug and provided with means whereby the position of the plug relatively to the gas passages can be readily indicated to the user.

In order to prevent the formation of hoar frost or ice in that portion of the gas supply pipe that lies between the burner and the wall or ceiling from which the lamp is suspended, I cover the said pipe with a sleeve, the inside diameter of which is larger than the outside diameter of the said pipe, thus leaving a space through which warm gases arising from an auxiliary gas jet can circulate. For this purpose I provide an auxiliary gas jet or jets near the burner and inside of the said sleeve; in cold climates these auxiliary gas jets would be caused to burn continually even when the lamp is not lighted. The heated gases from the said burning jets would rise and circulate inside of the sleeve around the gas supply pipe and would escape through an opening in the sleeve at a point near the said wall or ceiling, thus continually keeping the gas supply pipe sufficiently warm to prevent the formation of hoar frost or ice inside of it.

In order that the said invention may be more clearly understood and readily carried into effect, I will proceed to describe the same more fully with reference to the accompanying drawings, in which:—

Figure 1 is a sectional elevation of a lamp embodying the features of my invention, the globe being shown in its normal position, that is to say, inclosing the mantles. Fig. 2 is a sectional elevation showing the globe and tubular draft screen lowered and the tubular jacket turned into a position to permit of access to the mantles. Fig. 3 is a cross section on the line 1—1 of Fig. 2 showing the

tubular draft screen and the tubular jacket. Fig. 4 is a sectional elevation of a lamp in which access to the interior of the tubular draft screen is obtained by raising the tubular jacket instead of by rotating it. Fig. 5 is a sectional elevation of the base portion of the lamp illustrated in Figs. 1, 2 and 3. Figs. 6, 7 and 8 are sectional elevations similar to Fig. 5 but showing modified constructions of the pawl and ratchet device for retaining the globe in its raised position. Fig. 9 is a sectional elevation showing a further modified construction in which the pawls are upon the stationary portion of the lamp. Fig. 10 is an elevation of the burners, the by-pass or pilot tube, and the conical plug and connections. Fig. 11 is a vertical section showing the conical gas plug and the passages leading to the pilot tube, Fig. 12 being a similar section at right angles to Fig. 11.

A is the globe and A' the gallery to which it is connected by set screws or other appropriate means.

B B are the burners and C is the pilot tube.

D is the gas supply pipe, E the tubular draft screen and E' the tubular jacket surrounding said screen.

Referring first more particularly to Figs. 1, 2 and 4, the gallery A' is shown provided with a number of inclined teeth or pawls a which project through slots in the gallery A' and are controlled by the weighted extremities a^x which tend to maintain them in position for engagement with buttress or ratchet shaped grooves a^3 formed on the outer surface of a cup A² secured below the burners B to a stationary portion of the lamp. The stop piece a^5 serves to prevent the pawls from moving in an upward direction when the weight of the globe is supported by said pawls resting on one or other of the buttress or ratchet shaped grooves in the cup A². When it is desired to lower the globe the weighted extremities a^x of the pawls a are raised so as to disengage said pawls from the ratchet grooves a^3 , and the globe and gallery are then free to descend. When the globe is raised and the pawls come into contact with the said cup A² they will ride over the ratchet grooves a^3 , and when the globe has been raised to the requisite extent the pawls will remain in engagement with one or other of the ratchet grooves a^3 and prevent the globe from descending. The particular groove with which the pawls engage when the globe is fully raised will depend upon the depth of the globe; with a globe slightly less than average depth the pawls will engage with the uppermost groove, while with a globe slightly above average depth, the pawls will engage with the lowermost groove.

In the modified construction shown by Fig. 6 the pawls a instead of being con-

trolled by gravity as in the above described arrangement are controlled by flat springs a^2 and are provided with loops or handles a^4 to enable them to be readily manipulated.

5 In the further modification shown by Fig. 7, the pawls a are in the form of bolts provided with shoulders a^6 which are pressed inwardly toward the ratchet grooves by helical springs a^7 mounted in brackets or casings a^8 carried by the lamp gallery. The outer
10 ends of these pawl-bolts are furnished with thumb-pieces a^9 for facilitating their withdrawal from engagement with the said ratchet grooves when the globe is to be disengaged in order to lower it.

15 In either of the above described arrangements, the ratchet grooves might be formed upon the pawls themselves instead of upon the stationary portion of the lamp, and as applied to the gravity controlled type of
20 pawl, this modification is illustrated in Fig. 8. When the globe and gallery are raised from their lowered position one or other of the ratchet grooves on the pawls will automatically engage with the stationary portion
25 of the lamp and thus support the said globe and gallery in their raised position.

In Fig. 9 the pawls a , which are shown to be of the gravity-controlled type, are pivoted
30 or hinged to the stationary portion A^* of the lamp and are formed with tail pieces a^{**} shaped so that the pawls can be released simultaneously by pressing said tail pieces toward each other when it is desired to re-
35 lease and lower the movable portion of the lamp.

In order to limit the movement of the pawls a when being disengaged from the ledge a^3 , stop pieces a^0 may be provided to
40 prevent said pawls from being moved more than the desired distance. The extremity of each pawl engages with a ledge a^3 , of which several are shown in the drawing for use with globes of varying depth as hereinbe-
45 fore described, although in some cases a single ledge only need be employed.

Referring now to the means for shielding the mantles from wind or drafts and for readily gaining access to said mantles, the
50 draft screen E is provided with an opening e , and the tubular jacket E' surrounding said screen is provided with a corresponding opening or aperture e' , so that by rotating the said tubular jacket, the openings e and e'
55 may be made to coincide, or may be moved into a position in which the opening e is partially or wholly closed. The tubular jacket may be supported at its lower end by the lugs e^2 , or in any other convenient man-
60 ner.

When it is desired to inspect or repair the mantles, the globe is lowered as shown in Fig. 2 and the tubular jacket E' is rotated until the openings e and e' partly or wholly
65 coincide so that an attendant's hand may if

necessary be easily passed into the interior of the tubular screen E .

In the modification shown in Fig. 4, the tubular jacket E' is unprovided with an aperture and is raised when it is required to
70 expose the aperture e in the tubular draft screen E , a set screw e^3 or equivalent device being employed to clamp the tubular jacket E' at any desired height.

For the purpose of regulating the passage
75 of gas to the pilot tube C the conical plug b is formed with an inclined or branch passage b' leading from the main passage b^2 to the periphery of the plug and so located relatively to the main passage that when the gas
80 is only partly turned on to the burners by the plug b it is permitted to flow through the passages b^2 and b' to an intermediate passage b^x formed in the plug casing and thence to the pilot tube C . When however the
85 gas is turned completely on to the burners, that is to say when the passage in the plug b is fully open to the passage b^0 in the plug casing it is prevented from passing to the pilot tube by reason of the branch passage
90 b' being no longer in a position of coincidence with respect to the passage b^x . The said pilot tube C is provided with a series of holes c , so that when the gas jet issuing from the lowermost hole is ignited, the flame will
95 travel from jet to jet until it reaches the top of the by-pass tube whereupon the main burners will be ignited.

In order that the operator may readily understand how to manipulate the conical
100 plug b , the handle b^3 is provided with the chain b^4 having three rings b^5 , b^6 , b^7 , arranged so that when the ring b^5 is pulled to its lowermost position the gas supply is entirely cut off from both the burners B and
105 the pilot tube C , when the ring b^6 is pulled to the lowest position the gas supply is partially turned on to the burners B and fully turned on to the pilot tube C , and when the ring b^7 is pulled to its lowest position the
110 gas supply is turned completely on to the burners and is completely cut off from the pilot tube C .

D' is the protective sleeve surrounding the gas supply pipe D , the latter being provided
115 with perforations d at its lower end from which gas continually escapes. The gas jets issuing from said perforations are ignited, and air, to assist in the combustion, is admitted through orifices d' in the protective
120 sleeve D' , the products of combustion passing upward around the supply pipe D and escaping through the orifices d^2 at the upper end of the aforesaid sleeve D' , so that said supply pipe is maintained at a temperature
125 sufficient to prevent the formation of ice therein.

It will be understood that the construction of the protective sleeve may be somewhat modified without departing from the nature
130

of the invention; it may, for example, be open at the ends and held in position by any suitable clamping device, in which case the air necessary for combustion will pass directly up through the lower open end, and the orifices d^2 will be dispensed with. It will also be readily understood that the arrangement is equally applicable to gas supply pipes of curved or other design serving as brackets for attaching lamps to the exterior of the walls of buildings. In this case the outlet for combustion products would be located at the highest point of the curved sleeve, and gas jets would be located at both ends or at the lower portions of the curved sleeve.

What I claim and desire to secure by Letters Patent of the United States is:—

1. In an incandescence gas lamp, the combination with the supply pipe, the burners and stationary portion of the lamp, and the globe and portion of the lamp movable therewith, of gravity controlled automatically interlocking means comprising two parts, one part carried by the stationary portion of the lamp, and the other part by the relatively movable portion, so that when the globe and movable portion of the lamp are raised from their lowered position, said movable portion is secured to the stationary portion.

2. In an incandescence gas lamp, the combination with the supply pipe, the burners and stationary portion of the lamp, and the globe and portion of the lamp movable therewith, of a gravity controlled automatically interlocking pawl and ratchet device comprising two parts, one part carried by the stationary portion of the lamp, and the other part by the relatively movable portion, so that when the globe and movable portion of the lamp are raised from their lowered position, said movable portion is secured to the stationary portion.

3. In an incandescence gas lamp, the combination with the supply pipe, the burners and stationary portion of the lamp and the globe and portion of the lamp movable therewith, of a gravity controlled automatically interlocking pawl and ratchet device comprising two parts, one part carried by the stationary portion of the lamp, and the other part by the relatively movable portion, so that when the globe and movable portion of the lamp are raised from their lowered position, said movable portion is secured to the stationary portion, and means for actuating the pawls of said pawl and ratchet device to disengage the stationary and movable portions of the lamp.

4. In an incandescence gas lamp, the combination with the supply pipe, the burners and stationary portion of the lamp, and the globe and portion of the lamp movable therewith, of gravity controlled pawls which are carried by one portion of the lamp and of them-

selves automatically interlock the movable and stationary portions of the lamp as the globe is raised from its lowered position and thus retain said globe in its raised position, and tail pieces on said pawls for enabling the pawls to be simultaneously actuated.

5. In an incandescence gas lamp, the combination with the supply pipe, the burners and stationary portion of the lamp, and the globe and portion of the lamp movable therewith, of means forming part of the movable and stationary portions of the lamp whereby the globe, when raised from its lowered position, becomes automatically retained in one of a plurality of inclosing positions for the purpose specified.

6. In an incandescence gas lamp, the combination with the supply pipe, the burners and stationary portion of the lamp, and the globe and portion of the lamp movable therewith, of gravity controlled means forming part of the movable and stationary portions of the lamp whereby the globe, when raised from its lowered position, becomes automatically retained in one of a plurality of inclosing positions, for the purpose specified.

7. In an incandescence gas lamp, the combination with the supply pipe, the burners and stationary portion of the lamp, and the globe and portion of the lamp movable therewith, of gravity controlled pawls mounted on one of the aforesaid portions of the lamp whereby the globe, when raised from its lowered position, becomes automatically retained in one of a plurality of inclosing positions for the purpose specified.

8. In an incandescence gas lamp, the combination with the supply pipe, the burners and stationary portion of the lamp, and the globe and portion of the lamp movable therewith, of gravity controlled pawls mounted on one of the aforesaid portions of the lamp whereby the globe, when raised from its lowered position, becomes automatically retained in one of a plurality of inclosing positions, and means for actuating said pawls to release the globe.

9. In an incandescence gas lamp, the combination with the supply pipe, the burners and stationary portion of the lamp, and the globe and portion of the lamp movable therewith, of gravity controlled pawls mounted on one of the aforesaid portions of the lamp whereby the globe, when raised from its lowered position, becomes automatically retained in one of a plurality of inclosing positions, and tail pieces on said pawls for enabling the pawls to be simultaneously actuated.

10. In an incandescence gas lamp, the combination with the supply pipe, the burners and stationary portion of the lamp, and the globe and portion of the lamp movable therewith, of a plurality of ledges carried

by one portion of the lamp, and means carried by the other relatively movable portion of said lamp adapted when the globe is raised from its lowered position to automatically engage with one or other of the aforesaid ledges for the purpose specified.

11. In an incandescence gas lamp, the combination with the supply pipe, the burners and stationary portion of the lamp, and the globe and portion of the lamp movable therewith, of a plurality of ratchet-shaped ledges carried by one portion of the lamp, and means carried by the other relatively movable portion of said lamp adapted when the globe is raised from its lowered position to automatically engage with one or other of the aforesaid ledges for the purpose specified.

12. In an incandescence gas lamp, the combination with the supply pipe, the burners and stationary portion of the lamp, and the globe and portion of the lamp movable therewith, of a plurality of ledges carried by one portion of the lamp, and pawls carried by the other relatively movable portion of said lamp for automatically engaging with one or other of said ledges, for the purpose specified.

13. In an incandescence gas lamp, the combination with the supply pipe, the burners and stationary portion of the lamp, and the globe and portion of the lamp movable therewith, of a plurality of ledges carried by one portion of the lamp, and gravity-controlled pawls carried by the other relatively movable portion of said lamp for automatically engaging with one or other of said ledges for the purpose specified.

14. In an incandescence gas lamp, the combination with the supply pipe, the burners and stationary portion of the lamp and the globe and portion of the lamp movable therewith, of a plurality of ratchet-shaped ledges carried by one portion of the lamp and gravity-controlled pawls carried by the other relatively movable portion of said lamp for automatically engaging with one or other of said ledges, for the purpose specified.

15. In an incandescence gas lamp, the combination with the supply pipe, the burners and stationary portion of the lamp, and the globe and portion of the lamp movable therewith, of a ring carried by one portion of the lamp, a plurality of ledges formed on said ring, and means carried by the other relatively movable portion of said lamp adapted when the globe is raised from its lowered position, to automatically engage with one or other of the aforesaid ledges for the purpose specified.

16. In an incandescence gas lamp, the combination with the supply pipe, the burners and stationary portion of the lamp, and the globe and portion of the lamp movable therewith, of a ring carried by one portion

of the lamp, a plurality of ledges formed on said ring, and pawls carried by the other relatively movable portion of said lamp for automatically engaging with one or other of said ledges, for the purpose specified.

17. In an incandescence gas lamp, the combination with the supply pipe, the burners and stationary portion of the lamp, and the globe and portion of the lamp movable therewith, of a ring carried by one portion of the lamp, a plurality of ratchet-shaped ledges formed on said ring, and gravity-controlled pawls carried by the other relatively movable portion of said lamp for automatically engaging with one or other of said ledges, for the purpose specified.

18. In an incandescence gas lamp the combination with the supply pipe, the burners and the globe, of a draft screen provided with an aperture and movable with said globe, and means independent of said screen whereby said aperture may be covered or exposed, substantially as and for the purpose specified.

19. In an incandescence gas lamp, the combination with the supply pipe, the burners and the globe, of a draft screen provided with an aperture and movable with said globe, and a jacket independent of said screen surrounding said draft screen for covering or exposing said aperture, substantially as and for the purpose specified.

20. In an incandescence gas lamp, the combination with the supply pipe, the burners and the globe, of a draft screen provided with an aperture and movable with said globe, and a rotary jacket independent of said screen surrounding said draft screen and provided with an aperture capable of being brought into coincidence with the first mentioned aperture by a rotary movement substantially as and for the purpose specified.

21. In an incandescence gas lamp, the combination with the supply pipe, the burners and the globe, of means whereby the globe when raised from its lowered position becomes automatically retained in an inclosing position around the mantles, a draft screen provided with an aperture and movable with said globe, and means independent of said screen whereby said aperture may be covered or exposed substantially as and for the purpose specified.

22. In an incandescence gas lamp, the combination with the supply pipe, the burners and the globe, of means whereby the globe, when raised from its lowered position, becomes automatically retained in one of a plurality of inclosing positions a draft screen provided with an aperture and movable with said globe, and means independent of said screen whereby said aperture may be covered or exposed, substantially as and for the purpose specified.

23. In an incandescence gas lamp, the combination with the supply pipe, the burners and the globe, of means whereby the globe when raised from its lowered position becomes automatically retained in one of a plurality of inclosing positions, a draft screen provided with an aperture and movable with said globe, means whereby said aperture may be covered or exposed, and means for lighting said burners from outside of the globe substantially as and for the purpose specified.

24. In an incandescence gas lamp, the combination with the supply pipe, the burners and the globe, of means whereby the globe when raised from its lowered position becomes automatically retained in one of a plurality of inclosing positions a draft screen provided with an aperture and movable with said globe, means whereby said aperture may be covered or exposed, and a perforated pilot tube, substantially as and for the purpose specified.

25. In an incandescence gas lamp, the combination with the gas supply pipe, the burners and the lamp casing, of means whereby the heated gases arising from an auxiliary

gas jet or jets is caused to travel along that portion of the gas supply pipe that lies between the lamp casing and the wall or ceiling from which the lamp is suspended, for the purpose specified.

26. In an incandescence gas lamp, the combination with the gas supply pipe, the burners and the lamp casing, of an auxiliary gas jet or jets, and a sleeve covering that portion of the gas supply pipe which extends between the burner and the wall or ceiling that carries the lamp, the inside diameter of the sleeve being larger than the outside diameter of the supply pipe, for the purpose of conducting the heating gases, due to the burning of the said auxiliary gas jet or jets, throughout the interior of the sleeve and over the exterior of that portion of the gas supply pipe which extends between the burner and the wall or ceiling as aforesaid, for the purpose specified.

In testimony whereof, I affix my signature in presence of two witnesses.

CLARK WAY HARRISON.

Witnesses:

WALTER J. SKERTEN,
T. SEELY WARDLE.