GRIM & MOORE.

Lamp Reflector.

No. 101,470. Patented April 5, 1870.

Fig. 1

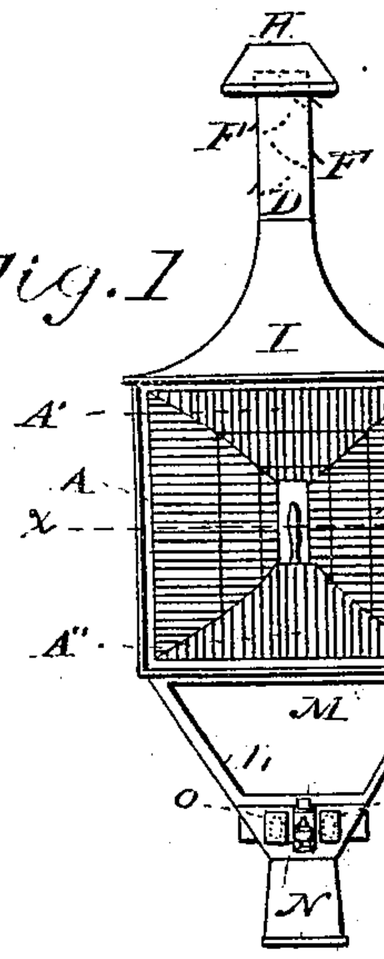


Fig. 2

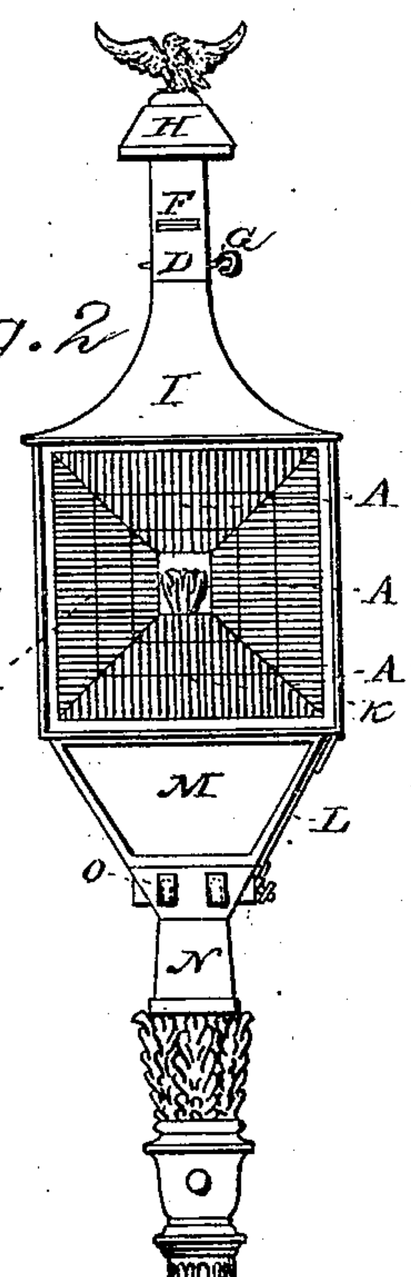


Fig. 3

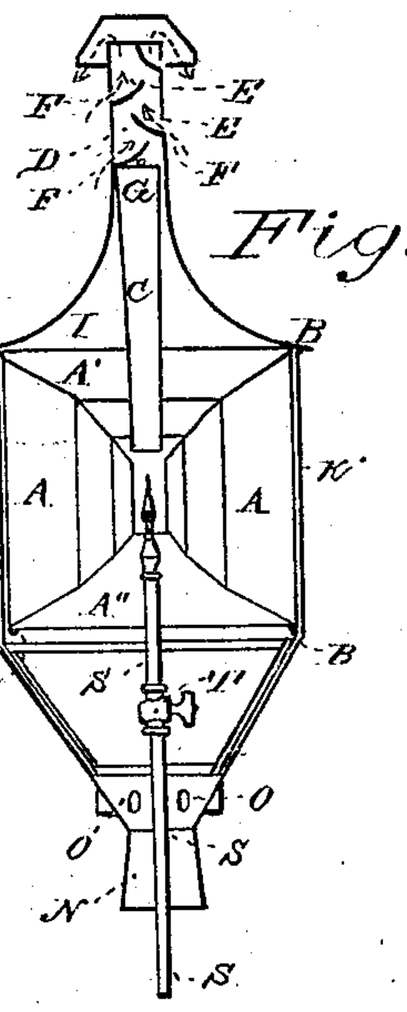


Fig. 4

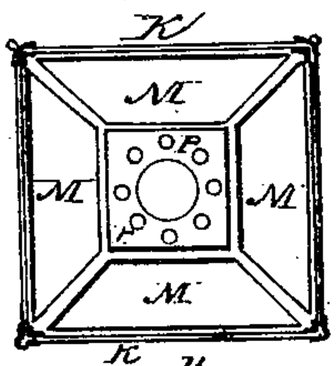


Fig. 5

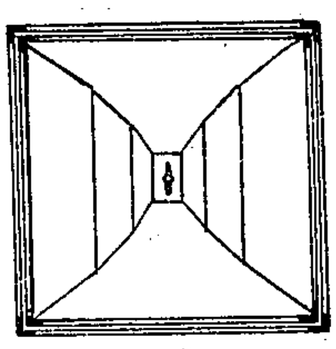


Fig. 6

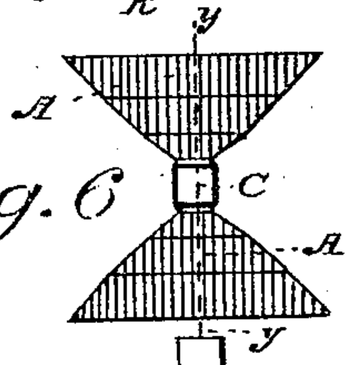


Fig. 7

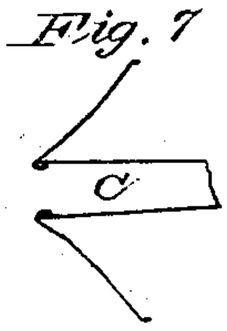


Fig. 8

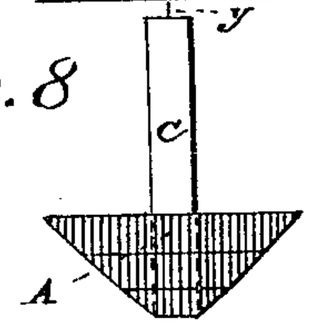


Fig. 9

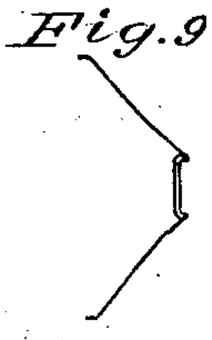


Fig. 10

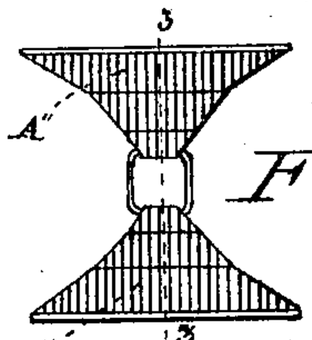
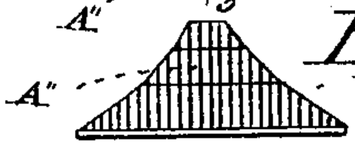


Fig. 11



Witnesses

Geo Pardy
J. B. Lowe

Inventors:

Abraham Kaufman Grim
Austin D. Moore

United States Patent Office.

ABRAHAM KEEFER GRIM AND AUSTIN D. MOORE, OF SAN FRANCISCO, CALIFORNIA.

Letters Patent No. 101,470, *dated April* 5, 1870.

IMPROVEMENT IN REFLECTORS FOR STREETS.

The Schedule referred to in these Letters Patent and making part of the same

We, ABRAHAM KEEFER GRIM and AUSTIN D. MOORE, both of the city and county of San Francisco and State of California, have jointly invented a certain new and Improved "Reflector-Lamp;" and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing and letters of reference marked thereon making a part of this specifition, in which—

Figure 1 is a side view of our lamp as it would face across a street;

Figure 2 is a front elevation of the lamp as it would face up and down a street;

Figure 3 is a vertical section, viewed from the same direction as in fig. 1;

Figure 4 is a plan or top view of outer casing of lamp;

Figure 5 is a sectional plan taken through the line *x x*, fig. 1;

Figure 6 is a plan of the upper side reflectors;

Figure 7 is a vertical section of the same taken through line *y y*, fig. 6; and

Figure 8 is a side view with chimney attached;

Figure 9 is a vertical section of the bottom "side reflectors," taken through the line *z z*, fig. 10;

Figure 10 is a plan of bottom "side reflectors;" and

Figure 11 is a side view of same.

Nature and Objects of the Invention.

This lamp is more particularly intended to be used as a street-lamp for burning gas, but can be used for other purposes, and may be adapted for burning any illuminating substance. It is designed with a view to economize light, by reflecting the rays in such a manner as that none will be lost to utility, as is the case in the common non-reflecting street-lamp, where some of the light is diffused in the upper air, where it is useless for the proper purposes of street-illumination.

This lamp of our invention it is claimed will concentrate the light and give that direction to the rays which for the purpose is most desirable; that is to say, the rays of light will be projected horizontally around the circle of which the flame will form the center. There will, however, be light reflected downward immediately around the post or standard of the lamp, but no light will be uselessly diffused above.

Owing to its peculiar construction our lamp will cast no shadow of any importance, which difficulty it has been our particular care to obviate.

Heretofore an objection to reflecting lamps has been that they have not reflected the light around the entire circle of which a single flame might form the center; and, also, most reflectors of which the inventors are aware, are objectionable for the purposes of street-lamps owing to their intense brilliancy being painful for the eye to meet.

These and other objections we have sought to overcome, and, in concise terms, these are the advantages which we claim for our lamp:

First, we economize the light by concentrating and giving a direction to the rays most useful for the purpose.

Second, we provide a reflector which is not objectionable on account of any dazzling brilliancy painful for the eye to meet, while it is none the less effective for the purpose for which it is designed.

Third, owing to certain details of construction hereinafter to be explained, the flame of the lamp is permitted to burn steadily, undisturbed by high winds, air draughts, or other causes which might produce unsteadiness in the light.

General Description.

We will here describe the construction of our lamp, that others skilled in the art may make and use it.

The reflectors A A are made of plain or corrugated tin, or any other substance suitable for the purpose. Their shape is somewhat difficult to describe, but will be readily understood by reference to the figures of the drawing; however, to convey the idea as best we can of the shape and proper proportion of these reflectors, let it be supposed that they represent hollow frusta of pyramids, having four irregular sides, whose bases will be thirteen and one-half inches square, the sides converging upward until, at a vertical height of three inches, a section parallel to the base would be nine and one-half inches square; at a vertical height of five inches a section parallel to the base would be six inches square, and at the top of the frustum where the sides terminate, that is, six inches from the base vertically, the opening will be two and one-half inches square.

With this proportion it will be found that the sides of the reflectors will not be straight from the base to the apex of the pyramid they may be supposed to form, but will converge at three different angles. These pyramid-shaped reflectors will sit relative to each other in the lamp, so that a straight horizontal line pointing up and down the street will also form true axes for the pyramids, the apexes of which would meet in the center.

We adopt the above-described peculiar-shaped reflectors because it is found that straight-sided reflectors projecting the rays of light from one common base have the effect to dazzle and pain the eye by their intense brilliancy.

In our reflector the rays of light do not concentrate at a common base; but there are several bases, each

projecting light at a different angle, and hence the eye of the observer, no matter where he may stand, will only be assailed by the rays projected from the reflecting base of which he happens to obtain a direct view; thus the intense brilliancy is avoided without injury to the best effect. Another reason for the peculiar construction of our reflectors is that the rays of light may be and are projected from each of the four sides of the lamp in such a manner, that they intersect each other at near the lamp, and, by so doing, shadows are avoided; this is to say, the light from the north reflector would cross the light from the east and west reflectors, and the south reflector would also project rays of light across those proceeding from the east and west reflectors, this crossing of the rays occurring close to the lamp.

We have only described what we shall call our back and front reflectors, their inside surfaces casting light up and down the street, their outside surfaces forming the vertical sides of the side reflectors, which light across the street, and the two outer sides of the bottom reflectors casting rays downward around the post. Now, to complete the reflectors, there will be two additional leaves, A′ A′, (figs. 6, 7, and 8,) to form the top "side reflectors," and two more, A″ A″, to form the bottom "side reflectors." (See figs. 9, 10, and 11.) The outside of these two leaves acts also to cast rays downward around the post.

These reflectors before described form the principal part of our invention, and care must be taken to obtain correct proportion of parts that the best effect may be produced. The proportions here given are found to be good; still some modification is permissible.

The reflectors will be properly secured in a frame of suitable material in any convenient manner, as desired. The plan we have found simple and convenient is to slide the reflectors into grooves formed in the top and bottom of the frame, as at B B, fig. 3, there being provided turned down edges on the reflectors about one-quarter of an inch deep, which will insert themselves into these grooves B B.

There will be a chimney, C, provided, as shown in figs. 3, 6, 7, and 8. It will act as a ventilating-pipe, and carry off any smoke that might be produced by the flame. This chimney will rest upon the turned-up edges of the top-side reflectors, as shown. Tin or Russia iron can be used to make this chimney.

D, in figs. 1, 2, and 3, is what we call the ventilator-top. It is designed to give free ventilation, but to prevent wind from blowing down the chimney. Its construction will be understood by reference to fig. 3 in the drawing, where it will be seen there is provided a series of slots or openings in the front and back sides. Projecting upward and inward from the lower edge of each of these openings there are what we call the guard-plates E E. These plates are curved as shown, and extend inward a trifle beyond the center. These guard-plates will, like the openings, extend from side to side of the ventilator-top.

It will be perceived that any wind that may blow from the top down the ventilator will be arrested by the guard-plates and guided out through the openings F F, which themselves admit a current of air directed upward, excellent for the purpose of increasing the draught in the chimney.

It will be well to insert a stout wire pin, G, through the sides of the ventilator-top immediately above the chimney, so as to keep it down in its place.

A cap, H, of common design is placed over and secured to the ventilator-top by braces in common manner, sufficient space being left for ventillating purposes between the cap and the ventilator-top.

The roof I of the lamp can have any design, as desired, which may suit the taste and is suitable for the purpose.

There is provided an outer frame or casing, K K, in which the panes of glass, as in ordinary lamps, will be fitted, and in which the inner frame which carries the reflectors will sit. There is nothing novel in the construction of this outer frame. For convenience the door may be placed in the lower part forming one of the bottom inclined sides, as at L; but if desired it may be otherwise provided. One door will be sufficient, and is merely used to light the lamp. It may be held by any suitable catch or fastening.

Below the inclined glasses M and before reaching the hub or socket of the lamp N, which fits on the post, there will be several air-holes O, as shown in figs. 1, 2, and 3. A cap may be made to cover them in manner as shown. This cap or hood is for the purpose of preventing the rain from entering or the wind from blowing in too violently.

In fig. 4 a top view or plan is shown of the outer framing K K, and

P represents a plate which will be set at just below the inclined glasses, and above the air-holes O O. This plate is perforated with holes, as shown, to admit the air to supply oxygen to the flame.

N is the socket which is made to fit on the post. Of course, if the lamp is to be suspended or set otherwise than upon a post, modifications in the construction of the frame may be made and will readily suggest themselves.

S is the gas-pipe fitted with the turn-cock T, and a burner of any pattern may be used. The top of the burner should come at just about where shown in drawing, that is, flush with the lower edge of the opening in center of reflectors.

In fig. 10, which is a plan of bottom "side reflectors," the reflector plates are shown connected by a link of wire, U. This link may be either soldered or otherwise fastened to the plates.

Remarks.

We speak of the reflector-plates being corrugated. Now it is not absolutely necessary that they should be corrugated, this being simply a matter of choice.

The lamp will be made of different sizes and shapes, and the reflectors set at different angles according to the application made, and is designed for lighting streets and all public places in doors or in the open air, underground works, traveling conveyances, signal-lights, &c.

It may be used to burn gas, oil, or any illuminating substance.

In cleaning the inside of the glasses the frame carrying the reflectors may be lifted out of the outer frame, and, if necessary, the reflectors can be removed by sliding them out of their grooves.

A coat of transparent varnish or similar substance will be well if applied on the reflectors, and will keep them from tarnishing.

Claims.

What we claim as our invention, and desire to secure by Letters Patent, is as follows:

1. The reflectors A A′ A″, constructed and applied in the manner substantially as described and for the purposes as herein set forth.

2. The ventilator-top, with its so-called guard-plates and openings, constructed in the manner substantially as described and for the purposes as herein set forth.

ABRAHAM KEEFER GRIM.
AUSTIN D. MOORE.

Witnesses:
GEO. PARDY,
J. B. LOW.