

RAY & CLEVELAND.

2 Sheets—Sheet 1.

Locomotive Head Light.

No. 53,871.

Patented April 10, 1866.

Fig. 1,

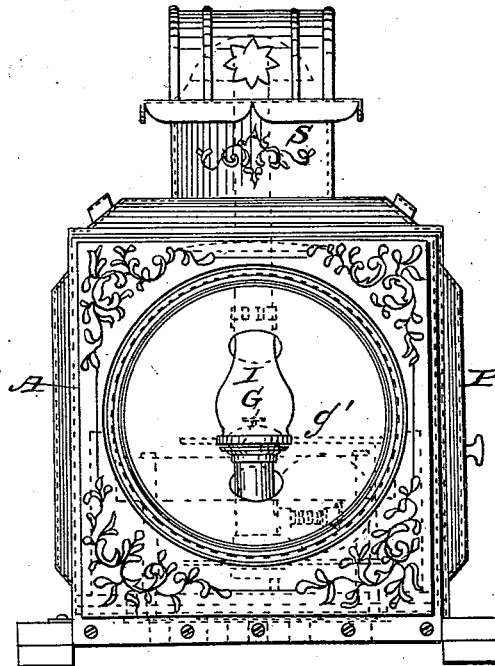


Fig. 2,

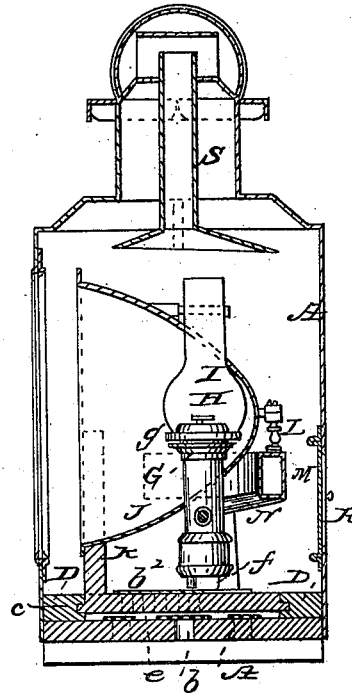
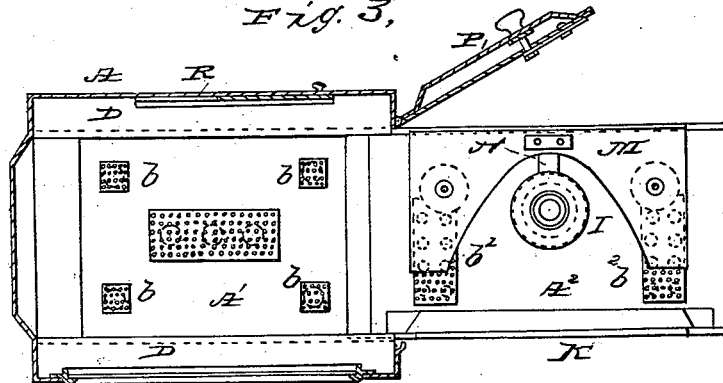


Fig. 3,



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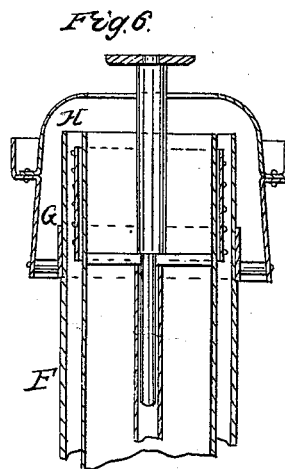
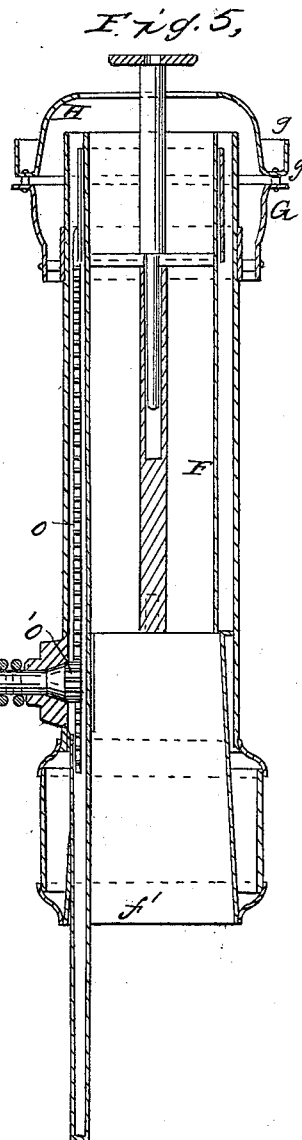
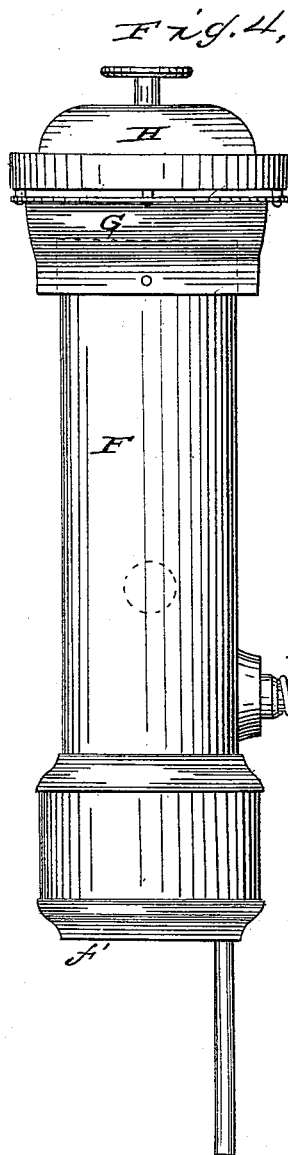
Inventor:
Thos. S. Ray
S. E. Cleveland.

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WITNESSES:

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UNITED STATES PATENT OFFICE.

THOMAS S. RAY AND SAMUEL E. CLEVELAND, OF BUFFALO, NEW YORK.

IMPROVEMENT IN LOCOMOTIVE HEAD-LIGHTS.

Specification forming part of Letters Patent No. 53,871, dated April 10, 1866.

To all whom it may concern:

Be it known that we, THOMAS S. RAY and SAMUEL E. CLEVELAND, of the city of Buffalo, county of Erie, and State of New York, have invented certain new and useful Improvements in Locomotive Head-Light Lamps; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure I is a front elevation. Fig. II is a vertical section. Fig. III is a plan view of the bottom part of the outside case, the slide-board upon which the burner and reflector are placed being drawn partly out of the case. The lamp-case and reflector are drawn upon a scale of about one-eighth size. Fig. IV is an elevation of the burner, full size. Fig. V is a vertical section of the same. Fig. VI is a section, showing a modification in the shield, the shield being made larger at the bottom, and slightly tapering upwardly toward the flame.

A locomotive head-light lamp, as a whole, when completed for use, consists of a burner, which also includes the wick-tubes, cap or shield, deflector, chimney, and means for raising and lowering the wick, &c., and reflector, lamp-case, and oil-can.

The nature of our invention relates to improvements in petroleum and coal-oil lamps; and it consists, first, in making a circular opening through the shield and below the deflector, for the purpose of admitting air directly to and slightly below the outside base of the flame; second, in so placing and arranging the burner and reflector within the case that the burner shall receive its full supply of air from within the reflector for the outside of the flame, and its whole supply of air for the inside flame from within the case and below the reflector; third, leaving the bottom of the wick-tube open, so as to admit a full volume of air, free and unobstructed, into the wick-tube to supply the inside flame, in combination with perforated openings through the bottom of the case, and also with openings which cause the air to take an indirect route in its passage into the case; fourth, a free, unobstructed, and direct passage for the air through the shield at the top of the wick-tube to the outside base of the flame, in combination with perforated openings through the bottom of the case, and also

with such openings as cause the air to take an indirect route in its passage into the case.

In the accompanying drawings, letters of reference of like name and kind indicate like parts in each of the figures.

The lamp-case, which is represented at A, except the bottom thereof, is made of sheet metal, and is of common construction. The bottom part, A' and A², which embraces a part of our improvements, is made of wood. The bottom A' has several holes or openings made through it for the admission of air. These holes are covered with perforated metal, as shown at *b*. Above this bottom is placed a removable or sliding bottom-board, A², which, by means of tongue and groove, as shown at *c*, Fig. II, will permit the board to be drawn out, and with it the burner, and reflector, and oil-can, as shown in Fig. III, and then returned to its place, as shown in Fig. II. The grooves are formed in extra strips D, placed upon the bottom A' and the tongues on the edge of the sliding bottom.

The sliding bottom A² is placed sufficiently above the stationary bottom A' to leave an air space or chamber between, as shown at *e*, Fig. II. The sliding bottom has several holes or apertures made through it for the admission of air from the chamber *e* into the case. These holes are covered with perforated metal, as shown at *b*². They are made in such place as not to range with the holes in the bottom A', in order that the air may be compelled to take an indirect route in its passage into the case. When the holes are thus arranged the perforated metal may be, in some instances, dispensed with. Our object in making these holes and covering them with perforated metal, or, if the perforated metal is not used, in so arranging the holes as to compel the air to take an indirect or circuitous route into the case, is to fill the case, and keep it filled, with a steady unwavering volume of air, which cannot be disturbed or set in motion by any motion of the air outside, so that the burner may draw its supply of air for the outside and inside of the flame, directly and without obstruction, from a steady and unwavering body of air. When perforated metal is used in the construction of the burner for the purpose of delivering a steady and unflickering supply of air to the flame, the body of air thus made

steady is necessarily small and restricted to the space within the perforated shells used for that purpose, and hence does not furnish sufficient oxygen, nor produce so perfect a combustion and so white a light as when the body of air from which the supply is drawn is much larger, and also steady and of sufficient volume to furnish all the oxygen the flame requires for perfect combustion, as provided for in these improvements.

The plan of constructing the case, as herein described, so as to fill it with a steady uniform body of air, enables us to make several improvements in the burner which very much improve the quality of the light. We now continue the inner wick-tube down below the outer tube, as shown in Fig. V, and leave the bottom thereof entirely open and unobstructed, as shown at f' , so that the inside of the flame may draw its supply of air directly and freely from the steady and unwavering body of air within the case.

The wick-tube F is made double, or with an outer and inner tube, to form an oil-chamber, as common. We also make a circular opening through the shield G, which is placed around the top of the wick-tube, for the purpose of admitting air directly and without obstruction or retardation to the outside base of the flame. This circular opening is shown at g' . It is below the deflector H and in close proximity to the outside base of the flame, so that the flame is fed from a body of air within the case, which is, practically, not in motion. A gallery, g^2 , is formed in this shield for the support of the chimney I.

The reflector is shown at J. This is of common construction. It is supported in front by the board K, and in rear by the standard or post L.

The oil can or reservoir is represented at M, and the oil-supply pipe at N. These are of common construction.

It will be noticed that the oil-can, burner, chimney, and reflector are placed upon and fixed to the sliding board A², so as to be moved out of and into the case with it. It will also be noticed that the burner is so placed and arranged with reference to the reflector that the shield G is wholly within the reflector, consequently the burner must take its full supply of air for the outside of the flame from within the reflector, and that the burner passes through the reflector, so that the inner wick-tube opens into the case below the reflector, and hence the air which feeds the inside flame passes in at the open end of the inner wick-tube directly from the case.

The devices for raising and lowering the wick consist of rack and pinion O O', and are similar to those described in a patent granted to us on the 5th of December, 1865.

A large door opening into the case is represented at P. A hand-hole and door are shown at R. The chimney to the case is shown at S.

The deflector H and shield G are so constructed and placed upon the wick-tube as to make a combustion-chamber around and above the base of the flame. The shield G is also left open at the bottom, in like manner as in our patent of December 5, 1865. The main purpose of leaving it open now is to allow the crisp and ashes from the wick to drop out, although a portion of air for the flame will pass in at that opening. In the modified form of shield shown in Fig. VI a larger opening is made at the bottom of the shield, which will admit a sufficient quantity of air to supply the outside flame when that form is used.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a locomotive head-light lamp for burning petroleum or coal-oil, having a cylindrical wick-tube, a top shield, and deflector, so constructed and placed upon the wick-tube as to form a combustion-chamber above and around the base of the flame, a circular opening made through the shield and below the deflector, for the purpose of admitting air directly to and slightly below the base of the flame, substantially as described.

2. In a locomotive head-light lamp having a cylindrical wick-tube, leaving the bottom of the wick-tube open so as to admit the air free and unobstructed into the wick-tube to supply the inside flame, in combination with an outside case which admits air through perforated openings in its bottom, or through openings which cause the air to take an indirect route in its passage into the case, for the purposes and substantially as described.

3. In a locomotive head-light lamp having a cylindrical wick-tube and a shield or cap around the top of the burner, a free, unobstructed, and direct passage for the air through the shield to the outside base of the flame, in combination with perforated openings through the bottom of the case, or with openings which cause the air to take an indirect route into the case, for the purposes and substantially as set forth.

4. The combination of a cylindrical wick-tube, left free and open at the bottom for admitting air to the inside of the flame, with a deflector placed on the top of the wick-tube, for deflecting the air to the outside of the flame, substantially as set forth.

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