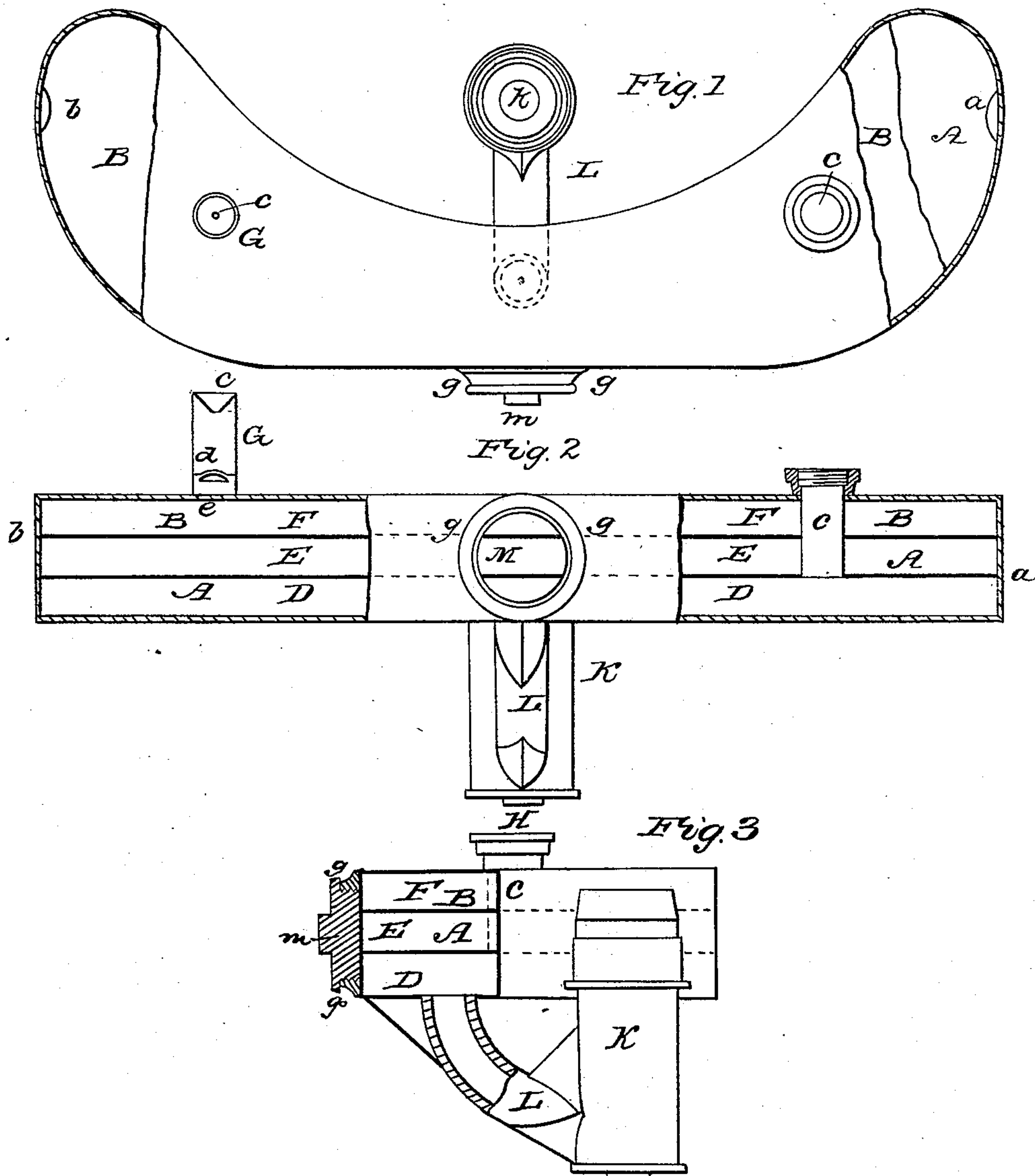


J. RADLEY.
Locomotive Head Light.

No. 29,402.

Patented July 31, 1860.



Witnesses
A. White
Robt. Reed

Inventor
J. Radley.

UNITED STATES PATENT OFFICE.

JAMES RADLEY, OF NEW YORK, N. Y.

LAMP FOR LOCOMOTIVES.

Specification of Letters Patent No. 29,402, dated July 31, 1860.

To all whom it may concern:

Be it known that I, JAMES RADLEY, of the city and county of New York and State of New York, have invented a new and useful improvement in the construction of lamps for locomotive-headlights and for other purposes where disturbing causes exist to interfere with the steadiness of the flame; and I do hereby declare that the following is a full and exact description thereof.

The importance of a clear flame of uniform intensity for the head lights of locomotive engines is so well known and appreciated that various methods of construction have been essayed in order to attain this object; the great difficulty to contend with arising from the sudden vertical and lateral movements or oscillations of the engine in passing over the numerous small inequalities and irregularities of the rails, causing the oil to surge from side to side of the reservoir, thus making it spurt or flow into the burner with a variable pressure and thereby producing a flickering and defective light entirely incompatible with the purpose for which the light is intended. Such a light confuses the engineer's ideas of distance, for this he intuitively determines for himself by the distinctness with which he can perceive objects within the range of his head light, and which should not be less than three hundred yards, a distance which is usually passed over in about twenty seconds, thus giving him about that length of time to detect the presence of danger on the track and to avoid it by stopping his engine and train, all of which, even with the most perfect head light, would require the whole of the very limited time and space at the command of the engineer; but by a flickering and uncertain light he may be so deceived in reference to distances as to involve himself and train in the most disastrous consequences. All of which difficulties and liabilities are completely obviated by my improved mode of construction.

To enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation, referring as I proceed to the accompanying drawings and to the letters of reference marked thereon, in which—

Figure 1 is a top view or plan of the improved oil reservoir; Fig. 2 a vertical longitudinal section and Fig. 3 a vertical transverse section thereof; and in all of

which the same letters are used to designate the same parts.

The oil reservoir, Figs. 1, 2, 3, is divided into narrow horizontal compartments or subdivisions by means of the horizontal diaphragms or plates A A, and B B, Figs. 2 and 3. These plates or partitions completely fill the interior space of the reservoir and are securely attached to it by their edges, but a small opening is left in each at the alternate ends, as shown at *a* and *b*, Figs. 1 and 2. In Fig. 1, a portion of the top plate of the reservoir and of one of the diaphragms are removed for the purpose of showing these holes.

The oil is poured into the reservoir through the duct or tube C, Figs. 1, 2, 3, which conveys it directly into the lowest compartment D D, and from thence the oil rises up through the hole *a* in the diaphragm A A, Figs. 1 and 2, into the middle compartment E E, and on that being filled it again rises upward, through the hole *b*, in the diaphragm B B, into the top compartment F F. The duct C should then be carefully closed by the cap H, Fig. 2, which is fitted to screw into it by the fingers, it having a milled edge, for that purpose, in the usual manner.

To permit the escape of the air from the reservoir while the oil is being poured into it and to admit air as the oil is consumed by the burner, I erect upon the top of the reservoir the vent chamber G, Figs. 1 and 2, previously making a small opening or vent in the top plate of the reservoir, about one eighth of an inch in diameter, as shown at *e* Fig. 2. A short distance above this vent and centrally over it and within the vent chamber G, I place the little hollow deflector *d*, which is of smaller diameter than the vent chamber G, thus leaving an annular opening or space around it through which the air may pass without obstruction; but should any oil be carried up through the air vent *e*, in the top plate of the reservoir, it will strike against the deflector *d* and be thrown back to the reservoir; and lest some oil should escape this deflector, which it can only do by passing up the sides of the vent chamber through the annular space around the deflector, I place a second mechanism at the top of the vent chamber G beyond which it cannot pass, this consists of the small inverted cone *c*, Figs. 1 and 2, and which is truncated so as to form a central air vent,

as shown, of about the same size as that at *e* in the bottom of the vent chamber.

The lower compartment D D, communicates with the burner K by means of the curved tube L, as shown particularly in Fig. 3, and as the oil is consumed it follows downward from the top or upper compartments through the small openings *b* and *a*, at the alternate ends of the diaphragms, to supply the consumption and to keep the lower compartment full as long as possible. The reservoir being thus divided into a series of low or narrow horizontal compartments, the oil is so confined vertically that it cannot surge and regurgitate within it as it does in those reservoirs where there is a space for air between the surface of the oil and the top of the chamber, even when such reservoirs are divided by vertical plates or partitions, whether such partitions are made to stand parallel with each other from side to side of the vessel or are arranged in the form of concentric circles, both of which methods have been long known and used as a palliative for this evil. But by my arrangement of horizontal partitions the oil remains quiescent in the reservoir, thus causing the burner to yield a steady light of uniform power, notwithstanding the jarring and vibration to which the apparatus is exposed by the movements of the engine as already explained. And this is the principal object which I had in view by the mode of construction which I have devised and described above, but there is a second object which I had in view and am able to accomplish by this mode of construction in combination with some additional parts, which I shall now explain.

In most oils which are used for illuminating purposes there are certain impurities which become deposited upon the inner surfaces of the containing vessel or reservoir, and is commonly termed "gum," from its adhesive and tough nature. This substance soon renders those reservoirs, which are divided by numerous partitions, unfit for use, until they are taken apart and cleaned, which is a work of considerable labor and expense; but by my arrangement of horizontal compartments and the means hereinafter described, I am enabled to clean out

the several compartments without disturbing any of the permanent parts. For this purpose I make a circular opening in the back of the reservoir, as shown at M, Fig. 2, sufficiently large to afford access to all the compartments F F, E E, D D, and through which they may be scraped, cleaned and washed out when required. This opening I surround with the brass margin or ring *g g*, Figs. 1, 2, 3, having a screw cut or chased upon its inner edge, into which is fitted the brass plug or stopper *m*, Figs. 1 and 2, and by means of which the said opening is securely closed and easily opened. By reason of this facility the lamp can easily be maintained in a clean condition and thus constantly able to produce a flame capable of yielding a light of maximum purity and power, while those lamps which are not thus capable of being cleaned without taking them to pieces as aforesaid are only removed to the workshop and submitted to that process as a last resort when the light becomes too defective for use.

Having thus described the nature, construction and operation of my improvements in lamps for locomotive head lights, what I claim therein as my invention and desire to secure by Letters Patent is—

1. The division of the oil reservoir, by means of horizontal diaphragms or partitions, into several shallow compartments or subdivisions, substantially as described.

2. The wash hole with its closing cap or plug, in combination with the horizontal compartments or subdivisions of the reservoir, by means of which access is had at once to all the said compartments, substantially as described.

3. In combination with the said horizontal compartments or subdivisions, the oil duct or tube, by which the oil is conveyed into the lowermost subdivision of the reservoir, together with the air vent chamber and its checks, by which the oil is retained while the air is permitted to pass out by or into the reservoir as required, substantially as described.

JAS. RADLEY.

Witnesses:

A. WHITE,
ROBT. REID.