C. T. HAM.

LOCOMOTIVE HEAD-LIGHT.

No. 188,130. Patented March 6, 1877.

Fig. 2.

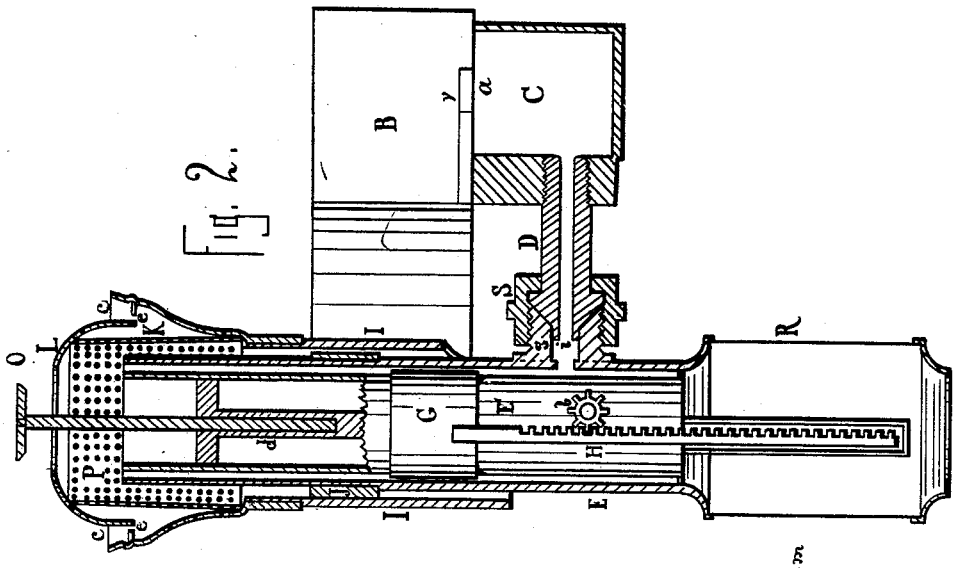

Fig. 4.

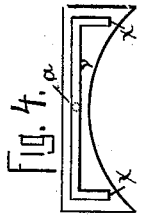

Fig. 3.

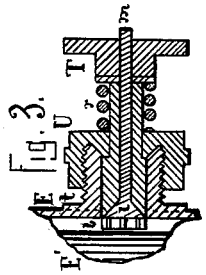

Fig. 1.

WITNESSES

Walter W. Admst.

M. A. Briggs

INVENTOR

Charles T. Ham,
by G. B. Selden
His Atty.

UNITED STATES PATENT OFFICE.

CHARLES T. HAM, OF ROCHESTER, NEW YORK, ASSIGNOR TO BUFFALO STEAM GAUGE AND LANTERN COMPANY, OF SAME PLACE.

IMPROVEMENT IN LOCOMOTIVE HEAD-LIGHTS.

Specification forming part of Letters Patent No. **188,130**, dated March 6, 1877; application filed December 6, 1876.

To all whom it may concern:

Be it known that I, CHARLES T. HAM, of the city of Rochester, in the State of New York, have invented certain Improvements in Head-Lights for Locomotives, of which the following is a specification:

My invention relates to certain improvements in the construction of burners for locomotive head-lights, by which the intensity and steadiness of the light are increased, and the removal of the burner for repairs is facilitated.

My improvement consists, in the first place, in an interior perforated cone within the perforated shield and deflector, surrounding the base of the flame and the upper portion of the wick-tube, for the purpose of increasing the steadiness of the light, and producing perfect combustion by properly regulating the currents of air supplying the outside of the flame. It also consists in a supplementary reservoir located underneath the main reservoir, and communicating with it through a small opening in its bottom, by which arrangement the motion of the oil in the upper reservoir caused by the vibration of the locomotive when running is prevented from affecting the light. It also consists in a detachable connection between the burner and the oil-reservoir, to facilitate the removal of the burner for the purpose of making repairs; and it also consists in a screw-connection, by which the pinion, rod, and handle used for elevating the wick are attached to the wick-tube in such a manner as to be readily disconnected when desired.

In the accompanying drawings, Figure 1 is a front view of a burner and reservoir for locomotive head-light embodying my invention. Fig. 2 is a side view, partly in section, of the same. Fig. 3 is a sectional view, showing the mode of connecting the pinion for raising the wick with the burner.

Similar parts are indicated by the same lettering in the various drawings.

In Fig. 1, A is the burner; B, the main reservoir, which is of the usual form, curved in front to fit the reflector; and C, the lower or supplemental reservoir, which communicates with the upper reservoir B through an opening, *a*, Fig. 2. The burner is attached to the lower reservoir C by the tube D, Fig. 2, through which the oil is fed. The wick-tube consists of two concentric cylinders, E and E′, Fig. 2, closed at their lower ends, and in the annular space between which the wick is raised and lowered by means of the ring G, rack H, and pinion *b*. Surrounding the upper portion of the wick-tube is a tube or jacket, I, supported in proper position on the outer cylinder E of the wick-tube by the ring J, which does not close the space between them. The jacket I carries at its upper end the perforated shield K and deflector L. The shield K is curved outward and perforated with openings, as shown in the drawings, and forms at its upper end a chimney-gallery, *c*, Fig. 2. The deflector I curves inward from the chimney-gallery about its base, is open at the top, and perforated with a row of holes, as shown in Fig. 1. At its base, where it bends outward to join the shield K, a row of perforations is made, as shown at *e*, Fig. 2. Above the deflector is placed the button O, upon a rod fitted to a tube, *d*, attached to the interior of the wick-tube E′. Inside the shield and deflector is placed a cone of perforated sheet metal, P, Fig. 2, which extends from below the lower row of perforations in the shield K to above the row of openings in the deflector. An annular chamber is hereby formed between the perforated cone and the shield, through which the air to supply the exterior of the flame circulates. The perforated cone regulates and distributes the currents of air, supplying the flame so evenly that perfect or nearly perfect combustion is the result of its use. It produces a light of great whiteness and intensity, and increases its steadiness. It may be used, in connection with the other parts, either with or without the jacket I, the principal office of which is to protect the reflector from becoming tarnished.

The inner wick-tube E′ is open at bottom, and the burner terminates at its lower end with a cylinder of perforated metal, R, which protects the rack H and its tube from injury. Below the main reservoir B is placed a supplementary reservoir, C, (shown in Fig. 1,)

communicating with the burner by means of the supply-tube D. The bottom of the upper reservoir B forms the top of lower reservoir C, and is perforated with a small opening, *a*, Fig. 2, which opens into a tube, *v*, placed lengthwise of the upper reservoir. This tube is bent at either end into a right angle, at the extremities of which, *x x*, Fig. 4, the oil from the upper reservoir enters the tube on its way to the lower reservoir through the opening *a*. So long as any oil remains in the upper reservoir, the lower reservoir is certain to be full, and the result of this arrangement is, that the fluctuations of the oil in the upper reservoir, caused by the motion of the engine when running, are prevented from affecting the steadiness of the light. As the supply from the lower reservoir to the burner is constant, the motion of the oil in the upper reservoir cannot affect the steady flow of oil to the burner, and thereby produce a flickering of the light; and as the bottom of the lower reservoir is placed some little distance below the opening of the supply-tube D, any sediment there may be in the oil is allowed to subside to the bottom of the lower reservoir.

The supply-tube D is detachably connected with the burner by means of a nut, S, Fig. 2, which screws onto a hollow boss, *g*, soldered to the outer wick tube E. A conical seat is formed in the outer end of the boss *g*, against which a corresponding face on the end of the tube D is drawn by the nut S. The tube D extends beyond the conical face, and is fitted to the opening in the boss *g*, as at *i*, Fig. 2, thereby securing additional strength in the joint. The conical surfaces are ground together, and by this arrangement the burner and reservoir are firmly, yet detachably, connected together without the use of gaskets or packing of any kind.

The rod *m*, Fig. 3, terminates at its inner end in a cone, *l*, to which the pinion *b* is secured. The spiral spring *r*, pressing against the hand-wheel T on the rod *m*, draws the cone *l* into a seat formed to receive it in the inwardly-projecting portion of the nut U, by which means a tight joint is formed about the rod *m*. A conical joint is also made between the outer end of the boss *t* and the nut U. By this construction the pinion *b* and its attachments may be entirely removed from the burner by unscrewing the nut U from the boss *t*, while at the same time leakage of oil is effectually prevented.

I claim—

1. The combination of the annular wick-tube E, perforated shield K, and deflector L with the inner perforated cone P, extending above and surrounding the upper end of the wick-tube, substantially as described.

2. The combination of the annular wick-tube E, jacket I, perforated shield K and deflector L, and the inner perforated cone P, substantially as set forth.

3. The combination, in a locomotive head-light, of the upper and lower reservoirs B and C, opening *a*, supply-tube D, annular wick-tube E, perforated shield and deflector K and L, and the inner perforated cone P, substantially as and for the purposes set forth.

4. The combination, in a head-light, of a burner and oil-reservoir, connected by the supply-tube D, fitted to the boss *g*, with a conical joint and extension, *i*, and nut S, substantially as set forth.

5. In combination with the pinion *b*, the rod *m*, provided with the cone *l*, spring *r*, boss *t*, and nut U, constructed and operating substantially as and for the purposes set forth.

CHAS. T. HAM.

Witnesses:

THEODORE BACON,

GEO. B. SELDEN.