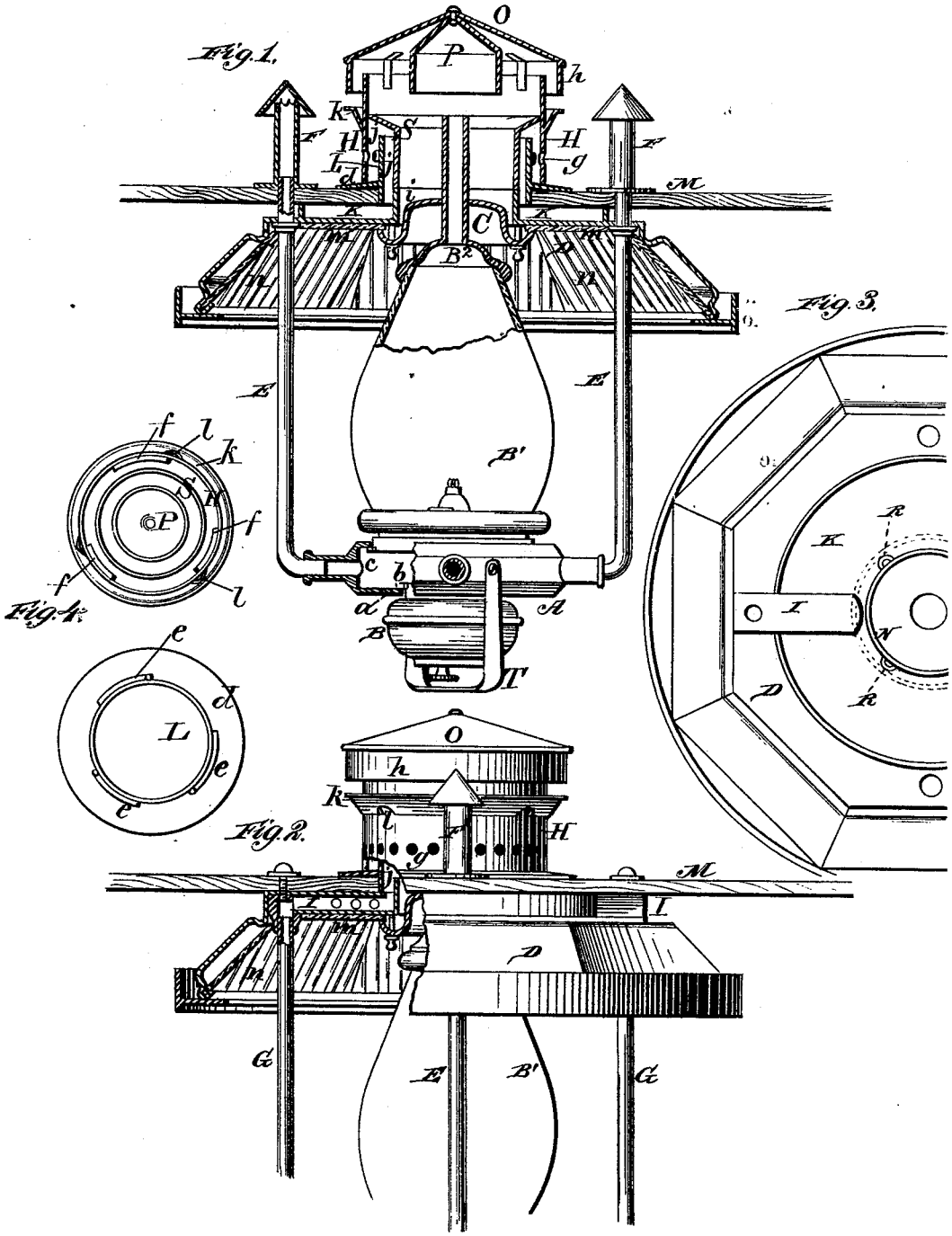
W. H. SMITH.

Car-Lamp.

No. 221,477. Patented Nov. 11, 1879.



WITNESSES

Robert Everett

Georgie D.

INVENTOR

Willard H. Smith

by Wm. Bailey

his ATTORNEY

UNITED STATES PATENT OFFICE.

WILLARD H. SMITH, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN CAR-LAMPS.

Specification forming part of Letters Patent No. **221,477**, dated November 11, 1879; application filed September 4, 1879.

To all whom it may concern:

Be it known that I, WILLARD H. SMITH, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Center-Lamps for Cars, of which the following is a specification.

My invention relates to car-lamps, being specially designed to furnish an improved center-lamp for steam and other cars and vehicles, which will more effectually and thoroughly light the same than the lamps now in use, and will not be affected by gusts or drafts or varying air-currents.

I so arrange the lamp that it communicates only with the atmosphere external to the car or other structure in which it is placed, not only having its chimney or discharge-flue leading to the exterior of the car, but also drawing from the same point—that is to say, from the exterior of the car—all the air requisite to support combustion. This air I introduce through the gallery or annulus which receives and supports the lamp, the said gallery communicating with the hollow supporting-tubes, which communicate only with the external air.

The construction and arrangement of the air-ducts and the various other parts of the lamp can, however, best be explained and understood by reference to the accompanying drawings, in which—

Figure 1 is a view, partly in vertical section and partly in elevation, of my improved lamp, the plane of section passing through the hollow arms or tubes which extend up through the car-roof. Fig. 2 is a similar view of the upper portion of the lamp, the plane of section passing through the arms which communicate with the air-space above the reflector. Fig. 3 is a plan of a part of the reflector, showing the air trunk and chamber above the same. Fig. 4 is a plan of the two parts of the central cowl or hood.

A is the lamp-gallery or supporting-annulus, and B the lamp, detachably connected therewith by the usual bayonet-joint fastening *a b*.

The lamp closes the gallery against entrance of air from below, and upon the upper part of the gallery is secured the base of the globe or chimney B′, the upper section of which communicates only with the exterior of the car. Thus, by means of the detachable lamp and the globe, all air from the interior of the car is excluded.

The gallery is hollow or formed with an air-space or chamber, *c*, communicating freely with the interior of the lamp structure on the one hand and on the other hand with hollow air-supply tubes or arms E E G G.

The arms E extend up through the roof M of the car, and have cowls or hoods F, which exclude rain, while admitting air.

The arms G, instead of communicating directly with the exterior of the car, open into air-trunks I, which, through perforations with which they are provided, communicate with air-chamber K, formed between the reflector D and the car-roof M.

The air-chamber K communicates with the exterior of the car, as will presently be described.

The chimney is of the ordinary construction, consisting of the glass globe or lower section, B′, and the metallic upper or chimney section, B^2, which projects up through a concavo-convex cap, C, closing the lower end of the central aperture in the reflector.

Surmounting the opening in the roof over the central aperture in the reflector is a hood or cowl, made up of two sections, the lower one, L, of which is tubular, and fits in the opening in the car-roof, upon which its flange *d* rests. A top view of this section is shown at L, Fig. 4. As there shown, it is provided with external ribs, *e*, which are intended to interlock, like a bayonet-fastening, with corresponding internal ribs on the lower end of the upper section, so that the latter can be removed and replaced whenever desired. This upper section consists of a tubular body, H, provided, as shown in reverse plan in Fig. 4, with ribs *f*, to engage those on the lower section, and with a series of air-admission apertures, *g*. At its upper end it is surmounted by a conical cap, O, whose downwardly-projecting rim *h* overhangs and extends below the top of the tubular body. The annular space between this rim and the upper edge of the tubular body H constitutes the escape-opening for the products of combustion.

Within the external conical cap is a smaller

cap, P, which is directly over the top of the chimney, and is intended to shield the latter from sudden drafts or air-currents.

Within the tubular body H is fixed an annular partition-piece, S, which extends from above the top of the lower section down into that section until it meets the annular rim *i* on the top of the reflector D. Thus, when the parts are fitted together, I form a circuitous or tortuous passage, *j*, from the air-holes *g* to the air-chamber K, and this air-passage is distinct and entirely separate from the central passage, through which are conducted off the products of combustion.

Upon the outside of the tubular body of the upper section, and near its top, is the flaring annular shield *k*, which prevents the splashing of water through the hood, and deflects away from the annular discharge-opening the air which in heavy gusts strikes the top of the car, and might otherwise be diverted upward into the hood.

The shield is provided with openings or scuppers *l*, for escape of water.

The reflector D is of any suitable construction. Its reflecting-surfaces *m n*, in this instance, are made up of sections of silvered glass or the like.

The top reflecting-surface, *m*, instead of being horizontal, as shown, may be inclined downward slightly from the center to its outer edges, in order to obtain a more perfect and even reflection.

The operation of the lamp is as follows: Upon lighting the lamp and securing it in place in the gallery, the heated products of combustion pass upward through the chimney into the hood, and thence pass off through the annular opening. Air is supplied to the lamp through the hollow arms or standards E G, a part being taken directly from the open air and another part from the chamber K, which communicates with the exterior of the car through the passages *j* and apertures *g*. The portion of air last referred to becomes heated on its way to the flame, thus increasing the intensity of combustion and giving better light.

It will be perceived that as the air to support combustion is all supplied from the outside of the car through the gallery, and as the lamp is entirely cut off from the atmosphere within the car, there is no possibility of the flame being affected by drafts through the car, no matter how violent, nor by inequalities that may from time to time arise between the air-pressures without and within the car.

In order to prevent possibility of the lamp falling from the gallery, I pivot to the latter a swinging strap or stirrup, T, which passes around under the lamp, and serves to catch it and arrest its fall in case it should, for any reason, become displaced or detached from its supporting-gallery. The stirrup can be swung aside at any time it is desired to remove or put in place the lamp.

Having described my improvements, what I claim, and desire to secure by Letters Patent, is—

1. The combination, substantially as hereinbefore set forth, of the lamp-gallery or supporting-annulus, the detachable lamp, closing the lower end of said annulus, and one or more hollow air-supply arms or tubes, communicating on the one hand with the exterior of the car and on the other hand with the interior of the lamp-gallery.

2. The combination, substantially as hereinbefore set forth, of the lamp-gallery or supporting-annulus, the detachable lamp, closing the lower end of said annulus, the globe or chimney communicating above the lamp only with the exterior of the car, and one or more hollow air-supply arms or tubes, communicating on the one hand with the exterior of the car and on the other hand with the interior of the lamp-gallery.

3. The combination, with a center-lamp for cars, of one or more tubes communicating with the interior of the lamp-gallery and with a space between the top of the reflector and roof of the car, said space communicating with the cowl or hood of the lamp, which communicates with the open air, whereby a current of heated air is supplied to the lamp, substantially as and for the purposes specified.

4. The hood composed of an upper and a lower section, constructed and fitted together substantially as described, and a double conical cap, applied to the upper section, and arranged to operate in connection with the lamp-chimney, substantially as set forth.

5. In combination with the gallery or supporting-annulus and the detachable oil-fount of a car-lamp, the swing stirrup or catch, pivoted to the gallery and extending under the fount, substantially as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of the subscribing witnesses.

WILLARD H. SMITH.

Witnesses:

W. BAILEY,

J. W. HAMILTON JOHNSON.