J. STEPHENSON.

Street-Car.

No. 161,566. Patented March 30, 1875.

FIG. I.

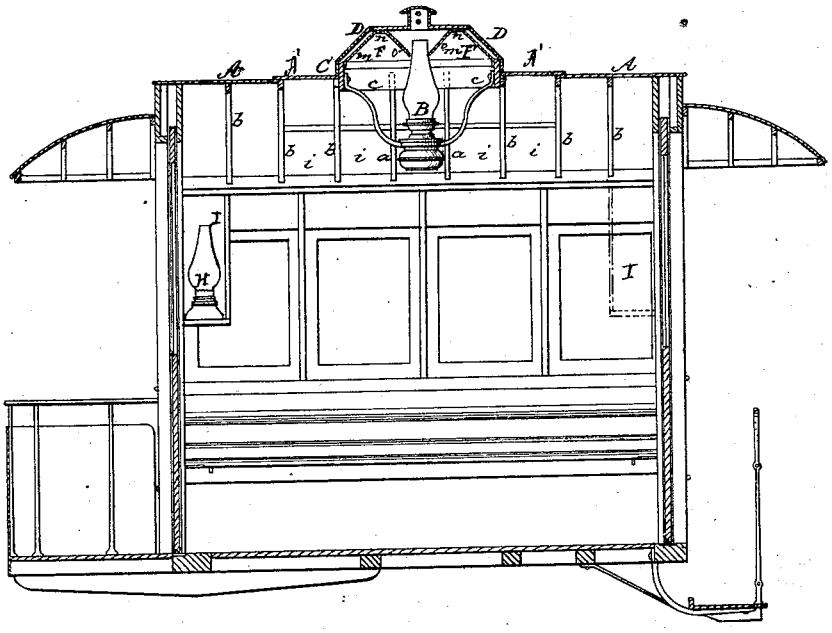
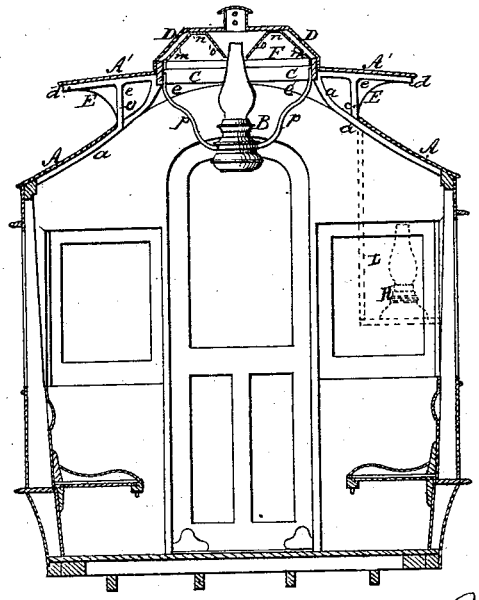


FIG. II.



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UNITED STATES PATENT OFFICE.

JOHN STEPHENSON, OF NEW YORK, N. Y.

IMPROVEMENT IN STREET-CARS.

Specification forming part of Letters Patent No. **161,566**, dated March 30, 1875; application filed March 2, 1875.

CASE G[7].

To all whom it may concern:

Be it known that I, JOHN STEPHENSON, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Street-Cars; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings and to the letters of reference marked thereon, which form a part of this specification, in which—

Figure 1 represents a vertical longitudinal section of a car-body having my improvement applied thereto, and Fig. 2 a vertical transverse section of the same.

For some purposes a lamp located in the center of the car-roof is desirable, and, therefore, portions of the roof have been elevated, in order that the lamp may be above the heads of the passengers. This elevation of roof, for various causes, is sometimes inadmissible, as, for instance, the door-lintel of the car-house may not be sufficiently high, or other difficulties may exist. I relieve such embarrassment by making in the center of the roof an aperture or well-hole of sufficient size, in which to place the lamp, and that in such manner that the lower portion only will lie beneath the plane of the roof, and the upper portion above the roof.

I am aware that cars have heretofore been made with lantern-tops—*i. e.*, with a portion of the roof elevated above the remainder—and such elevated portion provided with transparent walls, through which the light from the central lamp was transmitted, so as to form a signal, and by which lamp, thus centrally arranged, the car was lighted. Such construction in itself I do not claim; but, inasmuch as experience has proven that the location of the lamp in a central position is in itself insufficient to afford all the desired illumination, and as it is desirable to have the car well lighted that passengers may be enabled to read, and that pickpockets and other wrong-doers may be observed and detected, I have, therefore, combined with the central lamp a reflector of peculiar construction, and also a lamp or lamps at one or both ends of the car. The latter lamp, besides illuminating the interior of the car, may also be used to make the night-signals.

To enable others skilled in the art to make, construct, and use my invention, I will now proceed to describe it in detail, omitting a particular description of such parts of a car as may not be necessary to give a full understanding of the present improvement.

The body of the car may be of the ordinary construction, with the exception of the roof A, which is modified by cutting an opening or well-hole through it of circular or other suitable shape. This well-hole is strengthened by a correspondingly-shaped frame-piece, C, the upper or outer edge of which is provided with a close-fitting dome-shaped roof or cover, D, made of wood or metal, as may be desired. In putting the well-hole roof D on, it is deemed advisable to bring its lower edge down to the roof, so as to close the joint between the latter and the frame-piece C, it being then secured to either or both, as deemed best.

The frame-piece C may be secured to the upper portion of the rafters with which it is brought in contact in any suitable and proper manner. The two central rafters for this purpose, and for the purpose of making room for the central lamp B, are cut away, or rather are formed differently from the other rafters *b*, their upper ends being bent or curved slightly outward, and their inner face slightly cut away, so as to furnish a shoulder or support to the under side of the frame-piece C.

In the drawing, my improvement is shown in connection with a car-body provided with a roof, A, and a supplementary roof, A′, the latter being arranged in a plane, but the thickness of itself above the plane of the ridge or highest portion of roof A. This is done with the view of providing ventilation for the car and seats for outside passengers. For these or either of these purposes the supplementary roof A′ is given but little pitch, while the main roof A has a steep inclination or pitch, as shown in Fig. 2.

In constructing the car for the supplementary roof A′, the roof A or ceiling proper is left open or cut away along the line of the car for

a distance corresponding to the intended length of the roof A′, the width of the opening being made less than that of the roof A′. Over the opening in the ceiling, thus left, is erected and secured a frame, E, for the support of the supplementary roof A′, said frame consisting of two end-supporting pieces, *e*, and a series of auxiliary rafters, *d*, and stays *c*, all properly secured to the roof A and its supporting-rafters. The space between the under side of roof A′ and the upper side of roof A is left uncovered, thereby leaving an open communication through the upper ends of rafters *a* and *b* between the interior of the car and the outer atmosphere for ventilating purposes.

By reference to Fig. 2 it will be seen that the outer edges of roof A′ are made to project sufficiently far over the opening in roof A to prevent ingress to water in stormy and rainy weather. The supplementary roof A′ thus erected on roof A, the lamp well-hole is cut and its frame C and roof D applied thereto in the same way as before described in applying it to roof A direct.

The lamp-opening and its cover D having been constructed and applied as before described, a reflector, F, is then arranged on the under side of the dome or cover D, and secured in any suitable manner to the latter, or to the frame G. This reflector is of peculiar construction, it being formed with two reflecting-surfaces set at reverse angles to each other and to the plane of the horizon, and these connected together at their upper edges by another reflecting-surface set in a horizontal plane; the whole forming a double circular reflector arranged in a plane above the flame of the lamp B. Through the central portion of reflector F the upper end of the lamp-chimney is projected, so as to discharge its products of combustion into the open air through a short chimney, *h*, arranged in the top of dome D, or through any other channel provided therein or elsewhere for their escape—as for instance, through a space or spaces left between the back of the reflector and inside of the dome, and these suitably conducted into the ventilating-openings *i* beneath the supplementary roof A′; but for some reasons the chimney is preferred. The angular surface *m* of reflector F reflects the light downward over the central portion of the car, as does the horizontal part *n*, while the other angular surface *o* reflects downward and outward toward the sides and ends of the cars, forming at once a concentrating as well as a dispersing reflector, thereby causing the light from the central lamp to pervade the car as far as such an arrangement is capable of doing. The central lamp B is supported by means of a spider-frame, *p*, secured to the frame-piece C. This spider-frame is so constructed and arranged as to suspend the lamp above the lower marginal line of the roof A proper, and so that the top of the flame will be just a little below the plane of the under side of said roof A, while the chimney is made to project slightly above it. This construction of the roof admits of the use of a central lamp under the most favorable circumstances, and renders this class of car little if any more objectionable than a car in which no dome or central lamp is used. The ventilating-openings *i* may in winter be fitted with removable frames covered with a transparent medium, and these may be so applied as to be capable of being wholly or only partially opened or shut, as occasion may require. In addition to the central lamp B a lamp or lamps, H, are arranged at either or both ends of the car, a suitable chamber, I, for the purpose, being provided for each one used. For a large car, one at each end, as a rule, will be sufficient; but two may be used, if desired. For a single-horse car one lamp, H, in addition to the central one, will, as a rule, be found sufficient, although others may be used. In either case, I prefer to arrange the lamp H at the driver's end, so as to give him sufficient light to enable him to properly perform his various duties. This arrangement also enables that lamp to act as a signal-lamp, a suitable transparency being provided for the purpose as the outer cover to its chamber.

Having described my invention, what I claim as new is—

1. A street-car roof having a central opening combined with a lamp partly beneath and partly above the plane of the roof, substantially as and for the purpose set forth.

2. A street-car roof in combination with a lamp near its center, and with a reflector above the point for the flame of the lamp, consisting of two inclined surfaces, *m* and *o*, for casting light in reverse directions, substantially as and for the purpose set forth.

3. In a street-car, the combination of a lamp near the center of its roof, and a lamp or lamps located in one or both ends of the car, to serve the double purpose of a signal and of illuminating the interior of the car, substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOHN STEPHENSON.

Witnesses:
WM. JOHN WALKER,
JOHN SMITH.