

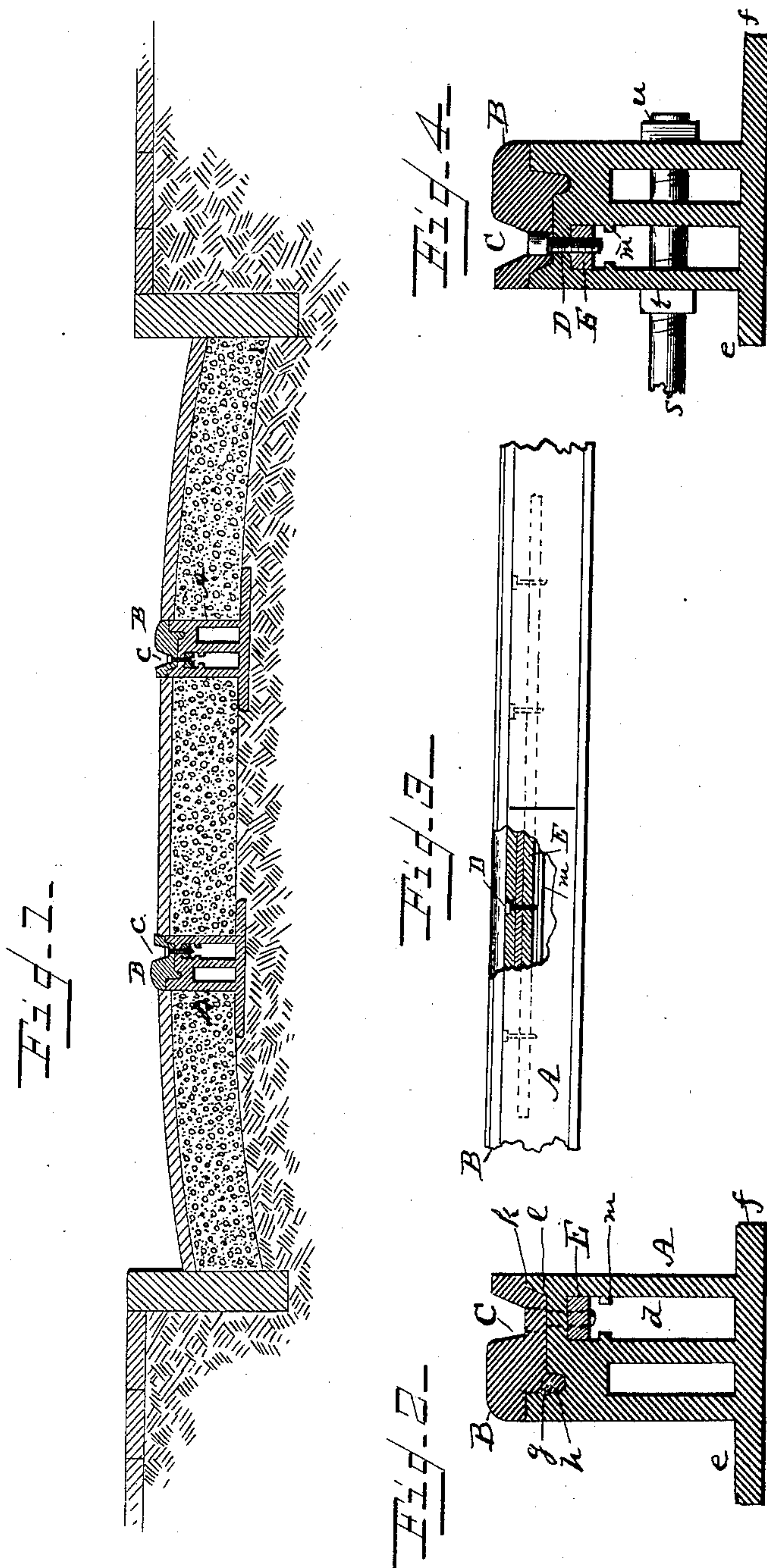
(No Model.)

F. V. GREENE.

## RAIL FOR STREET RAILROADS.

No. 341,416.

Patented May 4, 1886.



*WITNESSES*

Edwin L. Jewell,

W. S. Linsbaugh

INVENTOR

Francis V. Greene

By  
L. W. Sinsabaugh

*Attorney*



# UNITED STATES PATENT OFFICE.

FRANCIS V. GREENE, OF NEW YORK, N. Y.

## RAIL FOR STREET-RAILROADS.

SPECIFICATION forming part of Letters Patent No. 341,416, dated May 4, 1886.

Application filed December 28, 1885. Serial No. 186,910. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS V. GREENE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Rails for Street-Railroads, of which the following is a specification, reference being had therein to the accompanying drawings.

10 My invention relates to the construction of street-railways, and to a compound rail used in the construction of the same.

The object of my invention is to provide a track for street-railways which will be practically imperishable, so that no repairs are needed to the sleepers or substructure, and at the same time admit of the rail being removed when worn out and replaced by a new one without disturbing the remainder of the track.

20 Referring to the drawings, Figure 1 is a sectional view of the street, showing my improved rails embedded therein to form the track. Fig. 2 is a sectional end view of the left-hand track. Fig. 3 is a longitudinal view, partly in section, of my compound rail. Fig. 4 is a sectional end view of the right-hand track, showing a tie-rod for joining the two rails when necessary.

A indicates the sleeper or bearing-rail, 30 which is made of cast-iron, of any convenient or desirable length, but preferably about ten feet in length, and weighing about one hundred and forty pounds to the yard. The sleeper is cast with a longitudinal cavity or cavities, and with projecting flanges *e f* at the bottom, which gives to the sleeper a greater bearing-surface and a better hold in the hydraulic-cement base in which it is embedded. The top of the sleeper or bearing-rail A is 40 made of irregular form, as shown, to receive the rail B, which forms the track. The rail B is made of steel or wrought-iron, said rail being provided with a groove, C, in its upper surface to receive the flange of the wheel, the lower side of the rail being provided near its 45 outer edge with a tongue, *g*, which fits into the groove *h*, formed in the upper side of the sleeper A. The inner edge of the rail B is provided with a shoulder, *k*, which rests 50 against an offset, *l*, on the sleeper, which effectually prevents any lateral motion of the

rail, and no lateral strain is brought on the bolts which secure the upper rail to the sleepers A. The rail B, by reason of its peculiar form, is center-bearing—*i. e.*, the head of the rail which supports the wheel of the car is 55 placed centrally with reference to the sleeper below it. This is an important feature of my invention, as it prevents an unequal pressure on one side of the sleeper, and also obviates the tendency of the sleeper to turn around on its longitudinal axis, thus deranging its position. The sleepers A and rails B are laid so as to break joint, and the rail B is secured to the sleeper A by means of bolts D, which pass 65 through holes or slots formed in the same and enter the nut plate or bar E. The nut-plates E are adapted to fit within the upper portion of the cavity *d* of the sleeper A, said cavity being provided with lugs *m*, which prevents 70 the nut-plate from falling down into the bottom of the cavity *d* when the bolts are unscrewed. By this arrangement the bolts D are not affected by the vibrations of the rail and sleeper, which would have a constant tendency to shake the bolt and cause it to unscrew 75 from the nut-plate. These nut-plates are ordinarily about sixteen to eighteen inches in length, and one of them is placed under the joint of adjacent rails and another under the joint of adjacent sleepers, and still another at 80 the middle of each sleeper.

As before mentioned, the sleepers are ordinarily about ten feet long and the rails twenty feet long, so that the fastening between the 85 rails and sleepers by the bolts and nut-plates occurs at about every five feet. The nut-plates in the middle of the sleepers may be made much longer than those at the ends of the sleepers—say five or six feet in length—so that they 90 can be readily placed in position from the open end of the sleeper. As already intimated, the openings in the rails or sleepers through which the bolts pass may be in the form of slots, so that provision is made for expansion and contraction caused by thermal 95 changes. The sides of the rail B and the sleeper A are in the same vertical plane. This allows the pavement, whether of blocks or concrete, to be fitted closely to the sleeper and 100 rail, thus giving them a firm lateral support, and, by leaving no vacant space between the



10 rail and pavement, prevents the pavement  
from being worn into a rut along the rail.  
The flanges *e* and *f* at the bottom of the sleep-  
er pass under the pavement, and thus throw  
5 the weight of the pavement onto the sleeper,  
to aid in keeping it firmly fixed in its place.  
By these means the necessity for cross-ties or  
junction-bars uniting the two lines of sleepers  
are entirely done away with, provided the  
10 sleepers are firmly embedded in concrete and  
a substantial concrete or granite block pave-  
ment is laid between them. I prefer to lay  
the tracks in this manner; but there are cases  
in which this method of construction is unde-  
15 sirable on account of its cost, and it becomes  
necessary to lay a less durable pavement,  
which may not offer sufficient lateral strength  
to maintain the proper gage or width between  
the rails. In such cases the sleepers are laid  
20 on the natural earth and tied together at prop-  
er intervals by the usual wrought-iron tie-bars  
with screws and nuts, as shown at *s t u*, Fig.  
4. The earth or pavement is then filled in  
to the grade of the top of the rail.  
25 Having thus described my invention, what I  
claim, and desire to secure by Letters Patent,  
is—

1. A metallic sleeper for the rails of street-  
railroads, having its upper side adapted to re-  
ceive the tongue and shoulder of the bearing- 30  
rail, said sleeper being provided with an in-  
ternal longitudinal compartment for holding  
and retaining the nut-plate, as set forth.

2. A metallic sleeper for street-railroads,  
having an internal cavity, *d*, provided with 35  
ledges *m*, adapted to hold the nut-plate when  
the bolts are released.

3. The sleeper A, adapted to receive and  
support the rail B, in combination with the  
nut-plate E, located within a cavity in the 40  
sleeper, and the screw-bolts D, as set forth.

4. The combination, in street-railroads, of  
the sleepers A, having the lateral flanges *e* and  
*f*, and vertical sides, as shown, and an inter-  
nal cavity to receive the nut-plate, with the 45  
rail B and nuts or bolts D, as set forth.

In testimony whereof I affix my signature in  
presence of two witnesses.

F. V. GREENE.

Witnesses:

JOHN T. ARMS,  
L. W. SINSABAUGH.