

No. 645,647.

Patented Mar. 20, 1900.

E. C. MORGAN.

THIRD OR TRACTION RAIL FOR ELECTRIC RAILWAYS.

(Application filed Nov. 30, 1898.)

(No Model.)

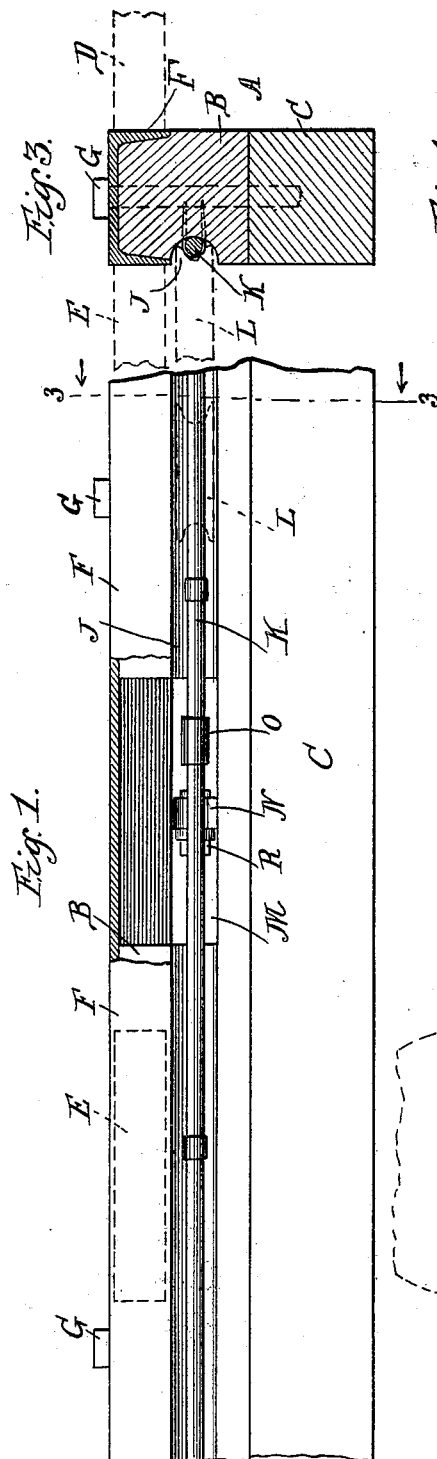


Fig. 1.

Fig. 3.

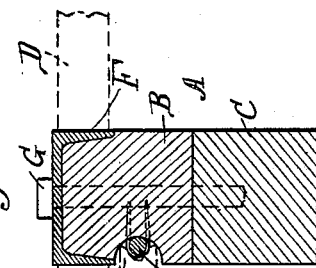


Fig. 4.

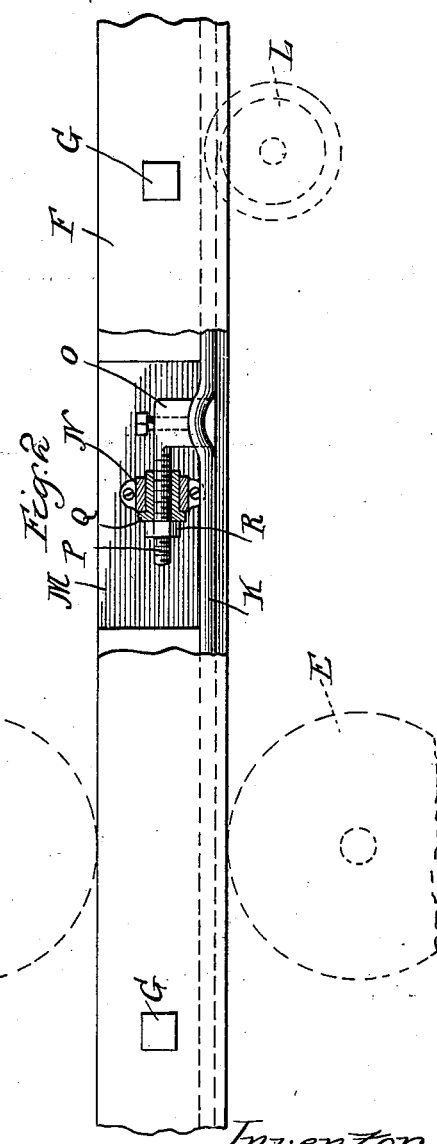
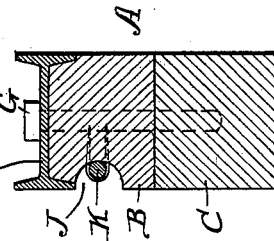


Fig. 2.

Witnesses.
Wm. M. Rheem
J. B. Barrett

Inventor
Edmund C. Morgan
by Brown & Darby attys.

UNITED STATES PATENT OFFICE.

EDMUND C. MORGAN, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE ELECTRIC HAULAGE AND MANUFACTURING COMPANY, OF BRAZIL, INDIANA.

THIRD OR TRACTION RAIL FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 645,647, dated March 20, 1900.

Application filed November 30, 1898. Serial No. 697,893. (No model.)

To all whom it may concern:

Be it known that I, EDMUND C. MORGAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Third or Traction Rail for Electric Railways, of which the following is a specification.

This invention relates to third or traction rails for electric railways.

10 The object of the invention is to provide a third or traction rail for electric railways which is simple in construction and arrangement, economical in construction, and efficient in operation.

15 The invention consists, substantially, in the construction, arrangement, and combination, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally specifically pointed out in the
20 appended claims.

Referring to the accompanying drawings and to the various views and reference-signs appearing thereon, Figure 1 is a broken view, partly in longitudinal section, of a third or traction rail embodying the principles of my invention. Fig. 2 is a similar view in plan of the same. Fig. 3 is a transverse sectional view of the same on the line 3 3, Fig. 1, looking in the direction of the arrows. Fig. 4 is a
30 view similar to Fig. 3, showing a slightly-modified construction included within the scope of my invention.

The same part is designated by the same reference-sign wherever it occurs.

35 In the operation of electric railways, and particularly electric railways such as are employed in mines and mining operations, it is important to provide a system wherein the cars may be started gently, in order to prevent the jar and shock of a quick start from causing the loads on the cars from sliding or being thrown off. It is also important to provide an efficient means for securing the required degree of traction whereby the cars
40 are operated smoothly and rapidly under the conditions of small space, light weight of track-rails, and steep grades encountered in mining operations.

I have conceived the idea of employing a
50 third or traction rail which in practice is arranged parallel with and preferably centrally

with respect to the track-rails, and I arrange said rail with reference to gripping or feed rollers carried by the car truck or frame and suitably operated by a motor carried thereby, 55 so that the sides of such rail may be gripped between pairs of such feed-rollers, whereby when said rollers are rotated the movements of the car or train hauled thereby are effected along the track. 60

In the drawings the third or traction rail embodying my invention is designated by the reference-sign A, and for the sake of economy, as well as for insulating purposes, is made of wood. In the particular form shown it is 65 composed of two parts or sills B C, placed upon and secured to each other and arranged longitudinally of the road-bed and supported upon and suitably secured to the road-bed cross-ties. The gripping or traction rollers (illustrated in diagram at D E, Figs. 2 and 3) are arranged to respectively grip the side surfaces of said rails on opposite sides, as shown. In order that an efficient gripping effect may be secured, and also with a view to reducing 75 wear, I prefer to face the gripped surface of the rail with metal. In the form shown in Figs. 1, 2, and 3 this facing may comprise a bar of channel-iron F, arranged as a cap over the top surface of the rail, with the flanges 80 thereof depending over the sides of said bar and receiving the contact of the gripping or feed rolls, the channel-iron being suitably secured to the rail, as by means of the bolts G.

In Fig. 4 is shown a slightly-modified arrangement wherein instead of employing a channel-bar I use an I-beam H, placed with the web thereof resting on the top surface of the rail and presenting the flat bases to the gripping action of the feed-rolls. 85 90

A traction-rail embodying the construction above described is durable, inexpensive, and presents an efficient gripping-surface to the action of the gripping feed-rolls.

Where the motor employed for actuating 95 the gripping feed-rolls is an electric motor, the third rail affords a convenient means for carrying and insulating the current-supply conductor. To this end the rail is suitably channeled or grooved longitudinally, as at J, 100 preferably in the side thereof, as shown, though the invention is not limited to this lo-

cation of the channel or groove, and the conductor K is placed in said channel or groove and suitably secured therein. A suitable contact (indicated in dotted lines at L, Figs. 1, 2, and 3) carried by the car or truck is arranged to travel along the conductor and collect the current therefrom. By thus placing the conductor K within the channel J not only is it removed from the danger of accidental contact with pedestrians and employees, but it is thereby also efficiently insulated and protected from accidental short-circuiting. In order that the conductor may be suitably tightened or stretched, as occasion may require, at suitable intervals throughout the length of the road or track, I provide suitable tightening or stretching means. A convenient arrangement is shown wherein at the desired intervals a short section of the rail is omitted, as shown at M, Figs. 1 and 2, and in the space thus provided the stretching device is arranged. In the form of stretching device shown, to which, however, the invention is not limited, a casting or block N is suitably secured to the rail. A stretcher-jaw O, arranged to suitably engage the conductor, is provided with a threaded bolt or stud P, arranged to pass through a sleeve Q, mounted in casting N. A threaded nut R serves to draw the bolt or stud, and with it the stretching-jaw, in the direction of the length of the conductor, thus effecting the tightening or stretching of the conductor.

The stretching devices above described are designed to form permanent parts of the rail, and by successively turning up on the nuts of said devices throughout the length of the road or rail the conductor is maintained in the desired tension.

Many variations in the details of construction and arrangement of parts would readily occur to persons skilled in the art and still fall within the spirit and scope of my invention. I do not desire, therefore, to be limited to the exact construction shown and described; but,

Having now set forth the object and nature of my invention and a construction embodying the principles thereof, what I claim as new and useful and of my own invention, and desire to secure by Letters Patent, is—

1. An insulating third or traction rail for electric railways, having a longitudinal groove or channel adapted to receive a conductor, said rail having transverse openings formed therein at suitable intervals, and conductor-stretching devices arranged in said openings, as and for the purpose set forth.

2. A third or traction rail for electric railways, comprising a wooden sill adapted to be arranged parallel with the track-rails, in combination with a metal beam having flanges forming end portions and a connecting-web, said flanges extending at substantially right angles to the web, said web arranged to rest flatwise on the top of said sill and the flanges of the end portions bearing against the sides of the sill, and gripping feed-rolls arranged on opposite sides of said sill to grip the outer surface of said end portions between them, as and for the purpose set forth.

3. A third or traction rail for electric railways, having a longitudinal groove therein, in combination with a conductor seated in said groove, whereby said conductor lies wholly within and beneath the surface of said rail, gripping feed-rolls arranged to grip said rail between them without contact with said conductor, and a collector arranged to extend into said groove to contact with said conductor, as and for the purpose set forth.

4. A third or traction rail for electric railways, having a longitudinal groove formed in the side thereof, in combination with a conductor adapted to be seated in said groove, and means for securing the same in place, whereby said conductor lies entirely beneath or within the side surface of said rail, feed-rolls arranged on opposite sides of said rail to grip the side surfaces thereof between them without contact with said conductor, and a collector arranged to project into said groove to make contact with said conductor, as and for the purpose set forth.

In witness whereof I have hereunto set my hand, this 28th day of November, 1898, in the presence of the subscribing witnesses.

EDMUND C. MORGAN.

Witnesses:

S. E. DARBY,
E. C. SEMPLE.