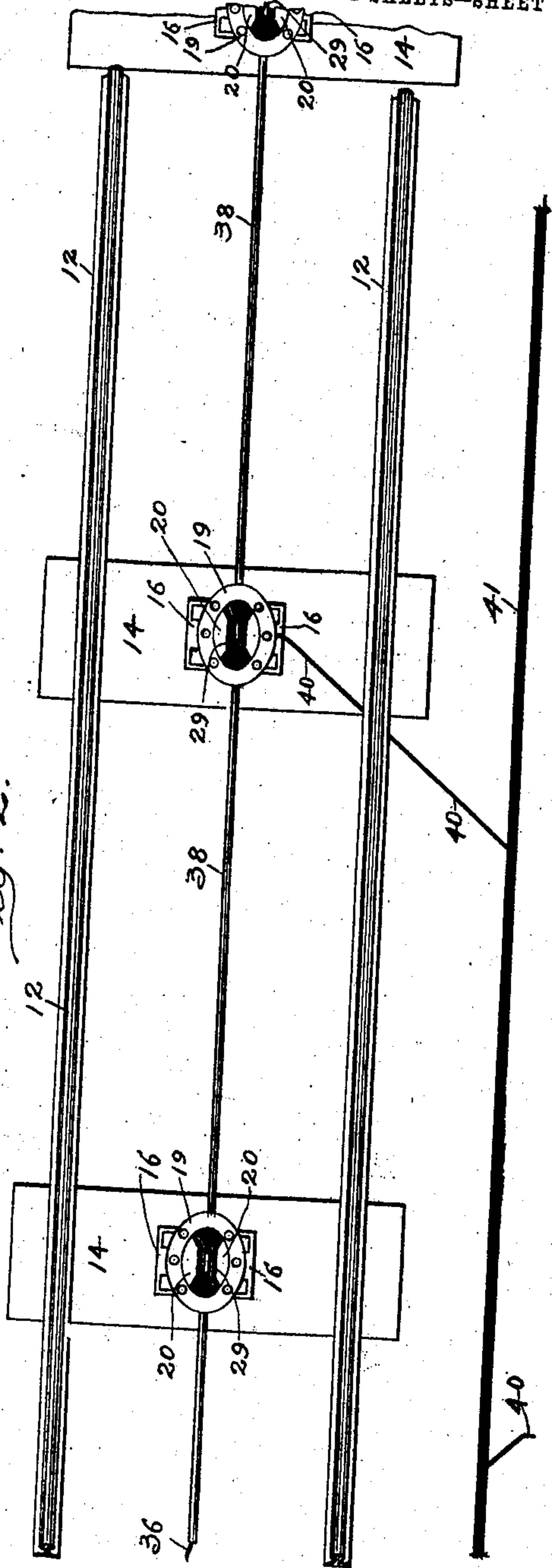
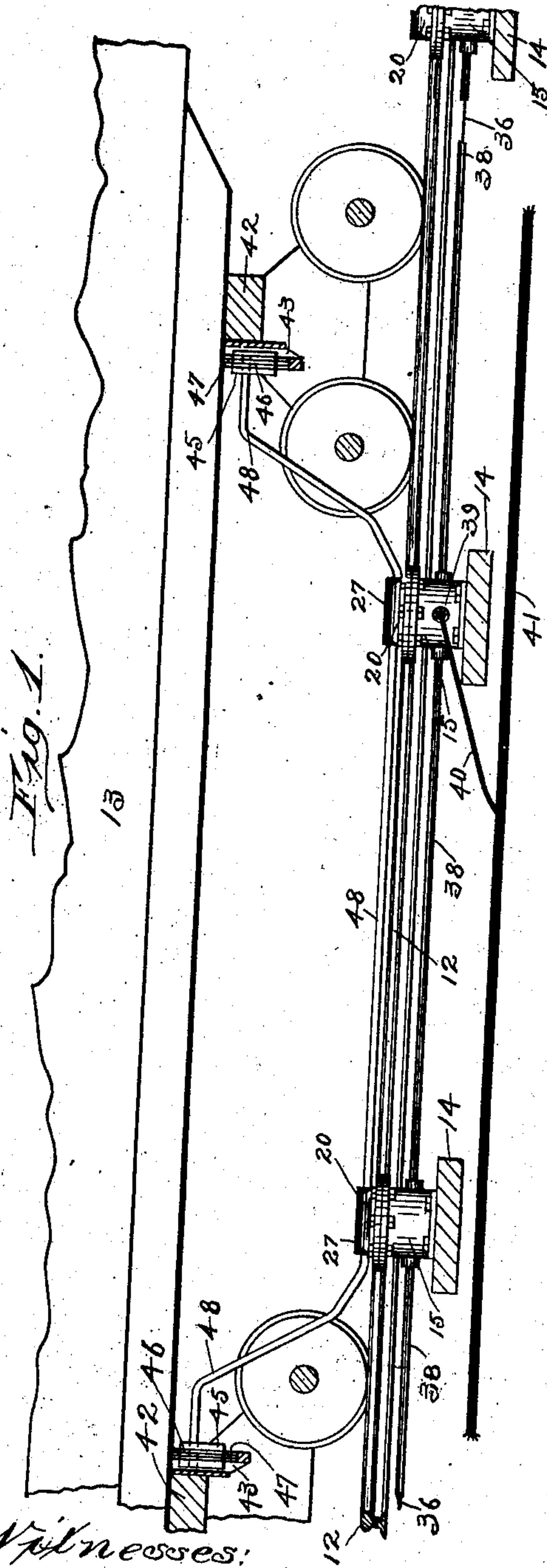


No. 827,189.

PATENTED JULY 31, 1906.
B. M. STACK & J. F. BURNS.
ELECTRIC RAILWAY.
APPLICATION FILED SEPT. 1, 1905.

2 SHEETS—SHEET 1.



Witnesses:

Chas. E. Gorton.
M. A. Nyman.

Inventors:

Bartholomew M. Stack.
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By Chas. E. Gorton
Att'y

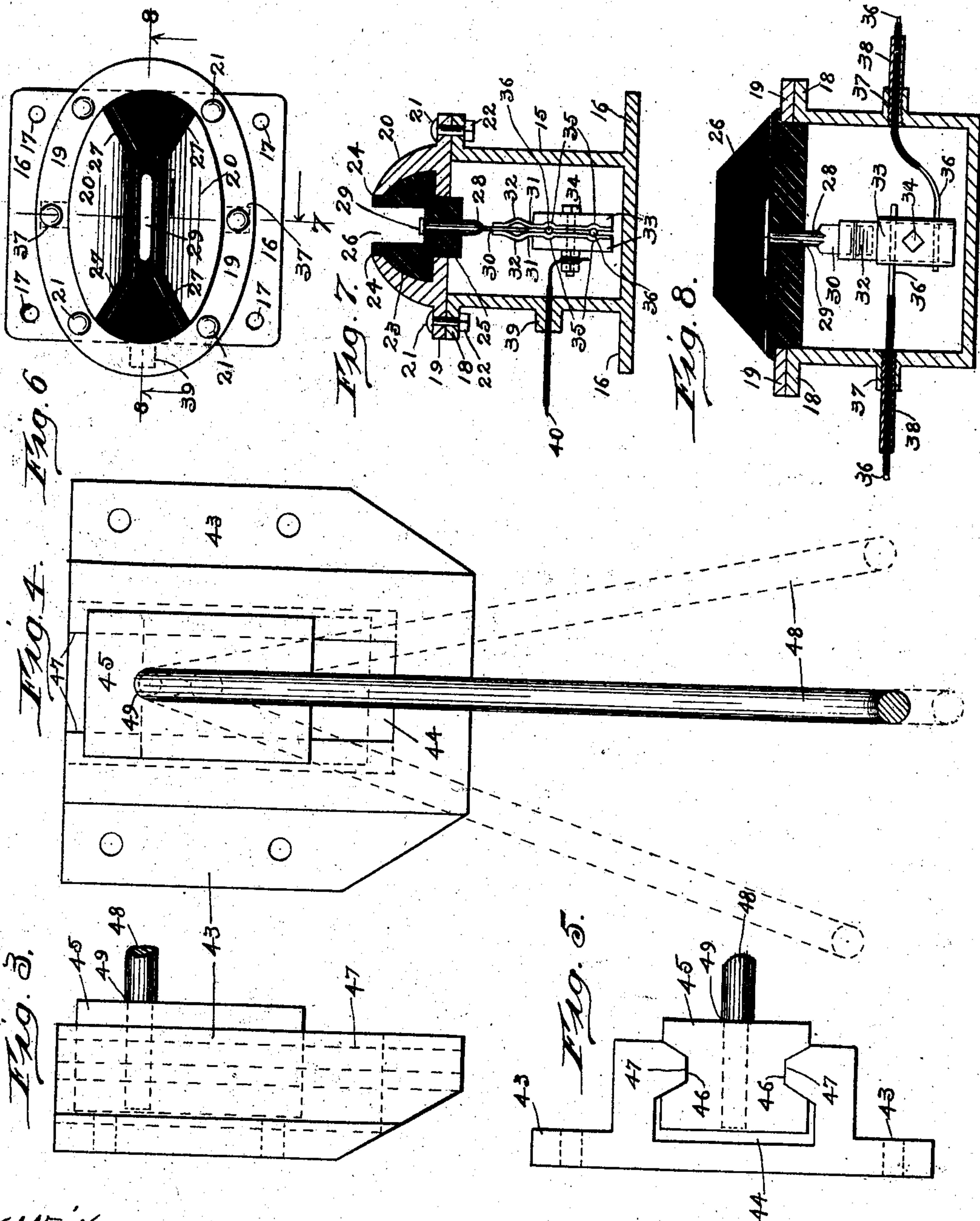
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UNITED STATES PATENT OFFICE.

BARTHOLOMEW M. STACK AND JAMES F. BURNS, OF CHICAGO, ILLINOIS

ELECTRIC RAILWAY.

No. 827,189.

Specification of Letters Patent.

Patented July 31, 1906.

Application filed September 1, 1905. Serial No. 276,674.

To all whom it may concern:

Be it known that we, BARTHOLOMEW M. STACK and JAMES F. BURNS, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electric Railways, of which the following is a specification.

This invention relates to improvements in electric railways of the type known as "surface-contact" systems or that class in which the electric current is furnished to the motor-car from a stationary source of supply, and while it is more especially designed (and in the present instance is shown) for use in connection with a ground or street railway, yet it is also applicable to elevated systems; and it consists in certain peculiarities of the construction, novel arrangement, and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

The principal object of our invention is to provide an electric railway system of the above-named character which shall be practicable, simple, and inexpensive in construction, durable and efficient in operation, with its parts arranged and so made as to avoid all danger of contact with the conductor by persons, animals, or vehicles; to prevent short-circuiting, and to reduce to a minimum leakage or waste of current.

Another object is to provide means for conducting the power-current to a traveling motor which can be applied to ordinary street-railways or elevated roads already constructed without disturbing the track or road-bed and in such manner that the parts shall be readily accessible for inspection or repair. Other objects and advantages will be disclosed in the subjoined description and explanation.

In order to enable others skilled in the art to which our invention pertains to make and use the same, we will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is a view in side elevation of a portion of an electric railway embodying our invention and showing a portion of a motor-car mounted thereon. Fig. 2 is a plan view thereof with the car removed. Fig. 3 is an enlarged side view of one of the supporting-brackets for the runner which is carried by the car to coact with the contact-studs. Fig. 4 is a face view of one of said brackets and a

portion of the runner, showing by dotted lines the positions the parts may occupy in the movement of the car. Fig. 5 is a plan view of one of the supporting-brackets and a portion of the runner. Fig. 6 is a plan view of one of the contact-studs and its holder. Fig. 7 is a central vertical sectional view thereof, taken on line 7 of Fig. 6 looking in the direction indicated by the arrow; and Fig. 8 is a like view taken on line 8 8 of Fig. 6 looking in the direction indicated by the arrows.

Like numerals of reference refer to corresponding parts throughout the different views of the drawings.

The reference-numerals 12 designate the rails of the track, which may be supported on cross-ties or in any well-known manner and have mounted thereon a motor-car 13 of any preferred or well-known type. Located between the rails 12, at suitable distances apart and mounted on supports 14, are a series of contact-studs and their holders. Each of these holders consists of a hollow base portion 15, which may be of any suitable size, form, and material, but preferably elliptical in shape, as shown, and of iron. The bottom of each of the bases 15 is closed, while its upper end is open to receive the contact-stud, as will be presently explained. Extending outwardly from the lower portion of the base 15, on each side thereof, is a flange 16, which is provided with openings 17 to receive bolts used for securing the base to its support. The upper portion of each of the bases 15 is provided with an outwardly-projecting horizontal flange 18, to which a similarly-shaped flange 19 on the head or cover 20 of the holder is secured by means of bolts 21 and nuts 22 thereon. As is clearly shown in Figs. 6 to 8, inclusive, of the drawings, the head or cover 20, which may be made of any suitable material, but preferably of iron, is rounded toward its top and has a flat bottom, the flange 19 of which rests on and is secured to the flange 18, as before stated. Each of the heads or covers 20 is provided with a cavity 23, in which is located insulating material 24, the lower portion of which extends through an opening 25 in the bottom of the cover or head. This insulating material is provided in its upper portion with a longitudinal slot 26, which is flaring at each of its ends, as is clearly shown in Figs. 2 and 6 of the drawings. By reference to the last-named figures it will be seen that the rounded or upper por-

tion of each of the covers 20 is cut away, as at 27, so as to provide outwardly-flared openings to correspond with the flared open ends of the slot 26. Vertically located in an opening in the central portion of the insulating material 24 of each of the heads 20 of the holders is a contact-stud 28, which is preferably made of copper and has on its upper end an extension 29, which lies longitudinally on the bottom of the slot 26, so as to extend from near one of its flared ends to the other. The inner or lower portion of each of the studs 28 is preferably flattened, as at 30, and is detachably located between two copper plates 31, which have their upper portions formed with an outward bend 32 to provide a yielding clamp for the lower portion of the stud. Located on the outer surface of the plates 31 are pieces 33, of brass or other suitable material, which are held together by means of a bolt 34, which passes through openings in said pieces as well as through openings in the plates 31, which plates are clamped by the pieces 33, as will be understood by reference to Fig. 7 of the drawings, in which view it will be observed that the lower portion of each of the plates 31 is provided with outwardly-bent parts 35, which register with one another and form recesses for the reception of the conductors 36, which are mainly insulated and passed through openings 37 in the ends of the bases 15 of the holders. The base portions of the contact-holders are united by means of tubes or pipes 38, which are screwed into the openings 37 or communicate with the cavities of the bases and carry the insulated conductors 36, which conductors are electrically connected to the plates 31 and through the same with the contact-stud 28 and extension 29 on the upper end thereof. Passing through an opening 39 in one side of one or more of the bases 15 is a conductor 40, which is insulated and has one of its ends electrically connected to the bolt 34, which secures the plates 31 and 33 together. This conductor leads from the main conductor 41, along which the electric current that is to form the propulsive force is transmitted from a dynamo or other source of electric energy.

Mounted on the bottom of the car 13, near each of its ends and usually secured to the cross-beams 42 of the trucks, is a bracket 43, which is provided with a vertical dovetailed guideway 44 for the reception and operation of a movable block 45, which has in its sides recesses 46 to receive the inwardly-extending projections 47 on the face of the bracket. Each of the blocks 45 is provided with an opening in its upper portion to receive the extreme end portions of the runner 48, which end portions are preferably slightly reduced to form shoulders 49 to prevent them passing too far through said openings and are pivotally secured therein. As is clearly shown in

Fig. 1 of the drawings, the runner 48 is bent so that its main portion will lie horizontally and longitudinally under the middle portion of the car or in such a position as to pass through the slots 26 of the heads or covers of the contact-stud holders, that portion of the runner between the ends of the horizontal portion and its extreme ends which fit in the openings of the movable blocks 45 being upwardly inclined, as shown. It will be understood that the distance between the contact-studs is less than the length of the horizontal portion of the runner 48, so that the engagement of the forward part of the runner with one of the contact-studs will take place before the rear portion of the runner has passed out of contact with the last contact-stud. The runner may be electrically connected to the motor (not shown) of the car in any suitable or well-known manner.

From the foregoing and by reference to the drawings it will be readily understood and clearly seen that in the operation of our railway system the bent-forward end of the runner will enter the slots 26 in the heads 20 of the contact-stud holders and pass through the same in the movement of the car, in which operation the runner will contact with the longitudinal extensions 29 of the studs 28, the weight of the blocks 45 and runner being sufficient to hold the latter in close contact with said extensions as it passes over the same. By pivotally securing the ends of the runner in the movable blocks 45 it is apparent that the runner will have a vertical as well as a lateral movement to compensate for any unevenness of the road-bed or contact-studs, and said movements will also permit the car to pass around curves. As the heads or covers of the contact-stud holders are rounded toward their upper ends and tightly close the bases 15, it is apparent that wagon or vehicle wheels striking the rounded portions will be slid off without injuring the holders and that the bases will be kept free from water or moisture, thereby preventing absorption or waste of the current in the holders. The contact-studs 28 being connected by the sectional conductors 36, which are insulated from the pipes 38, as before stated, it is apparent that only enough of the feed-conductors 40, which lead from the main conductor 41, may be used to supply the necessary current for propelling the car. In other words, the feed-conductors 40 need not lead to every one of the contact-studs, but to only a few of the same, and for this reason all of the bases 15 need not be furnished with the openings 39 for said feed-conductors.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In an electric railway, the combination with a motor-car, of a bracket having a ver-

tical guideway and mounted on the lower portion of the car near each of its ends, an apertured block movably located in said guideway, a runner having its end portions 5 upturned and pivotally secured in the apertures of said blocks and extending longitudinally beneath the car, a series of contact-stud holders located in the road-bed and having their upper portions longitudinally slotted to receive the runner, a contact-stud located in the upper portion of each of said 10 holders and insulated therefrom, insulated conductors uniting said studs, a main electric conductor and feed-conductors leading from said main conductor to some of the contact-studs, substantially as described. 15

2. In an electric railway, the combination with a motor-car, of a runner movably mounted on the car and beneath the same

and extending longitudinally therewith, a series of contact-stud holders located in the road-bed at distances apart less than the length of the runner, each of said holders consisting of a hollow base portion, a slotted head or cover portion and insulation located 25 in the cover portion, a contact-stud located in said insulation and extending into the cavity of the base, electric conductors uniting said contact-studs, a main electric conductor and feed-conductors leading from the 30 main conductor to some of said contact-studs, substantially as described.

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