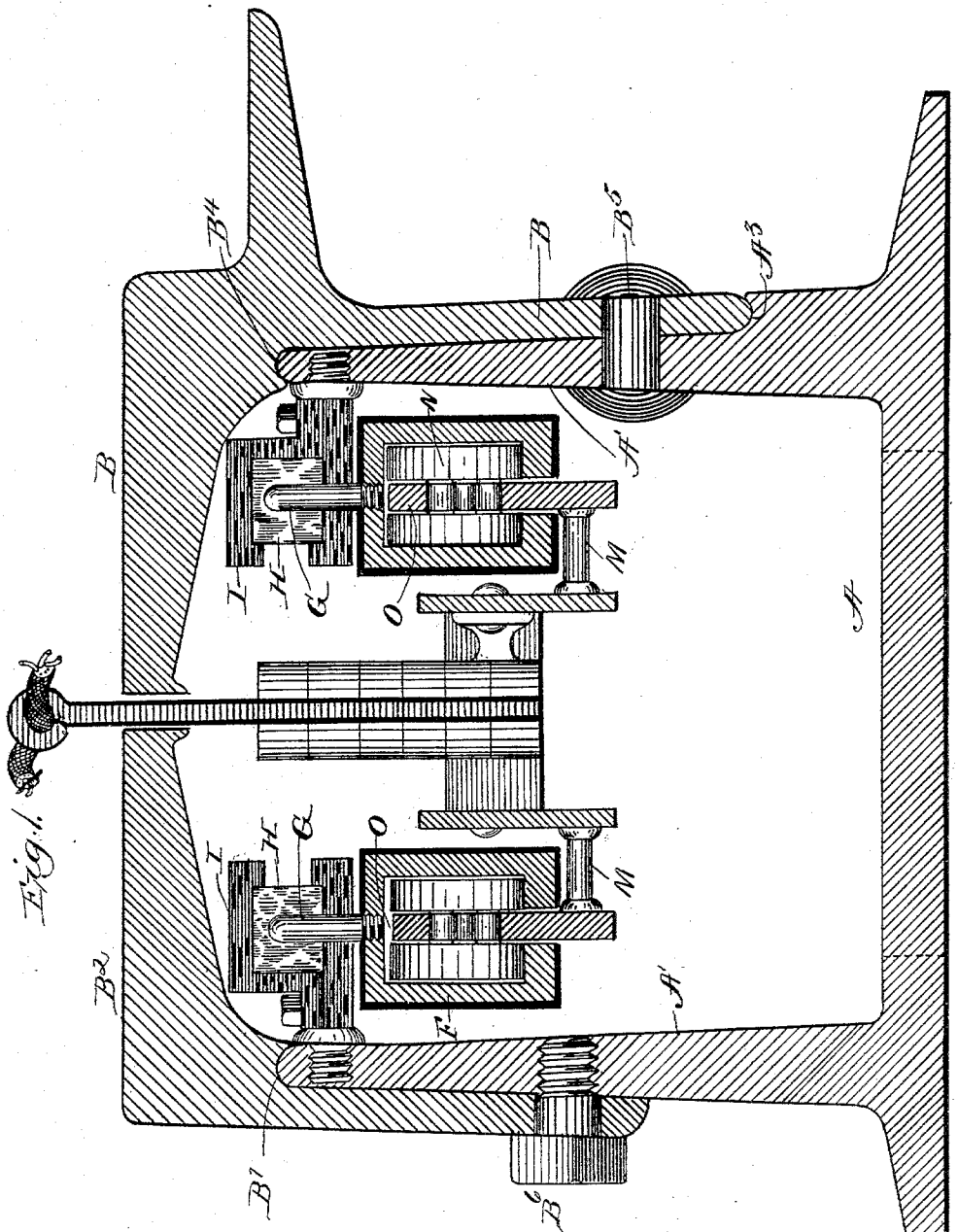
(No Model.) 3 Sheets—Sheet 1.

H. BRANDENBURG.

ELECTRIC RAILWAY.

No. 565,103. Patented Aug. 4, 1896.



Henry Brandenburg

INVENTOR.

WITNESSES:

William A. Gourmans.

Lucius Clark

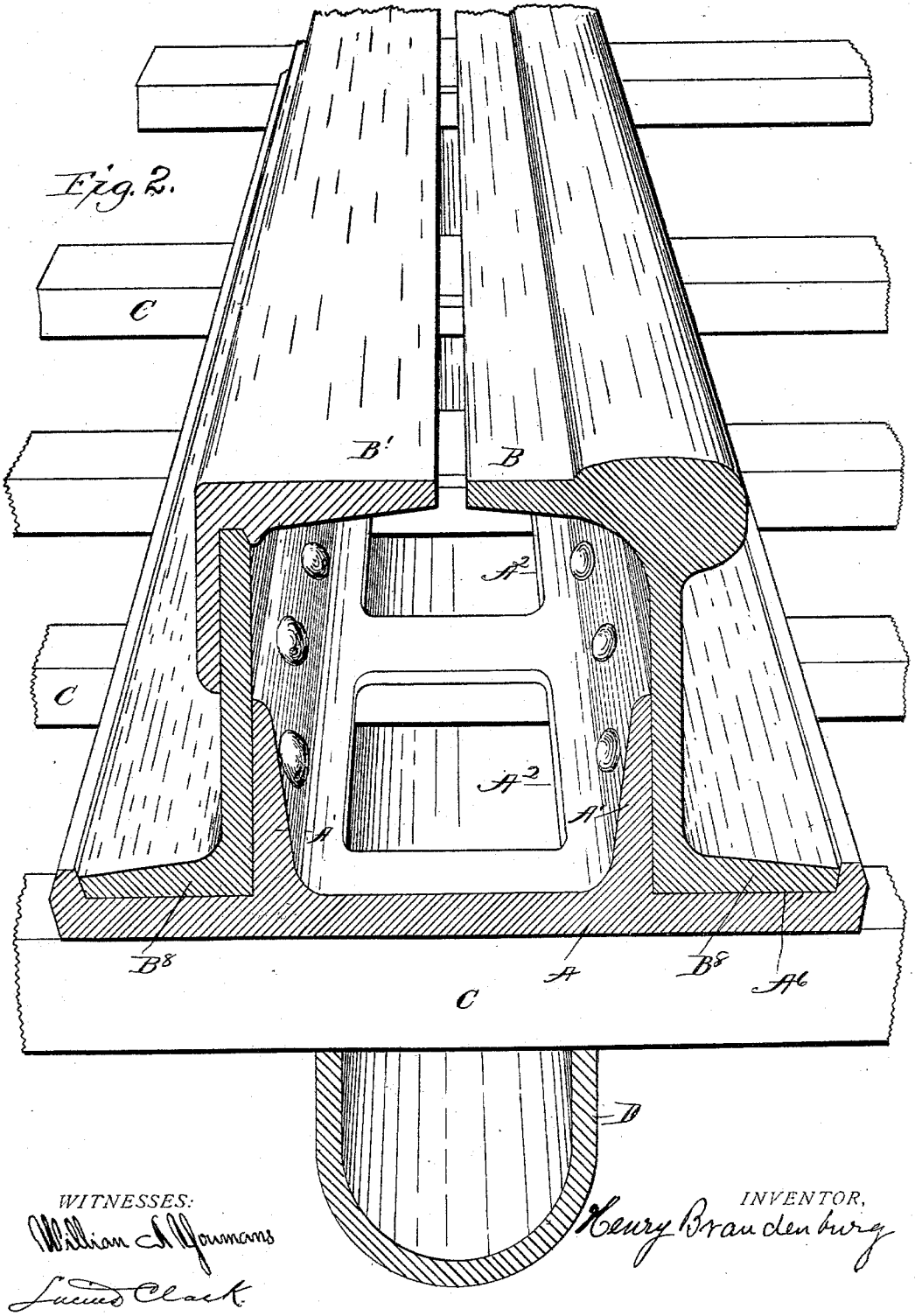
(No Model.) 3 Sheets—Sheet 2.

H. BRANDENBURG.

ELECTRIC RAILWAY.

No. 565,103. Patented Aug. 4, 1896.

Fig. 2.



WITNESSES:

William A. Youmans

Lucius Clark

INVENTOR,

Henry Brandenburg

(No Model.) 3 Sheets—Sheet 3.

H. BRANDENBURG.

ELECTRIC RAILWAY.

No. 565,103. Patented Aug. 4, 1896.

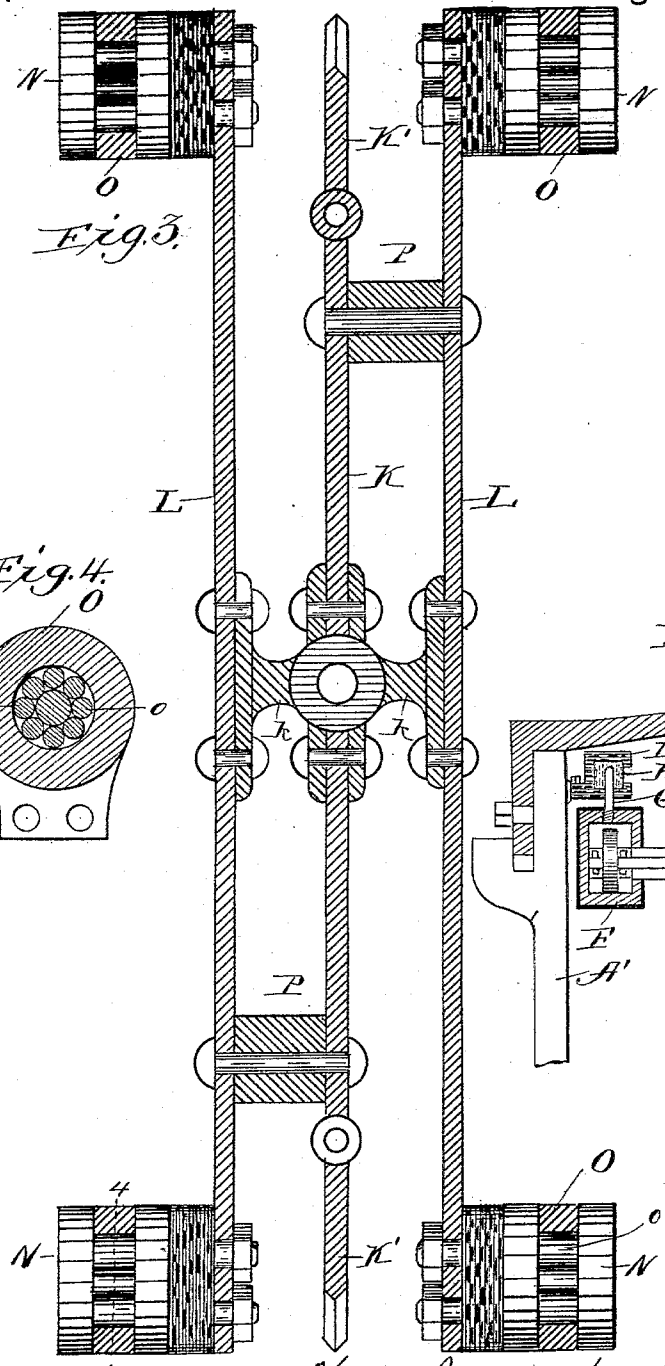
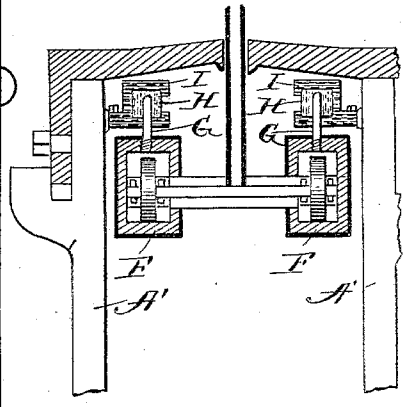


Fig. 3.

Fig. 4.

Fig. 5.



WITNESSES:

William A. Simmons

Lucius Clark

Henry Brandenburg INVENTOR,

UNITED STATES PATENT OFFICE.

HENRY BRANDENBURG, OF CHICAGO, ILLINOIS, ASSIGNOR TO CHARLES AUSTIN BATES.

ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 565,103, dated August 4, 1896.

Application filed August 28, 1895. Serial No. 560,791. (No model.)

To all whom it may concern:

Be it known that I, HENRY BRANDENBURG, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electric Railways; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates to improvements in conduit systems of electric railways, and has for its object to simplify and improve the construction of the conduit itself, as well as to provide a more efficient means for supporting and making contact with the trolley-conductors, all as will be now described, and pointed out particularly in the appended claims.

Referring to the accompanying drawings, Figure 1 is a sectional view through the superstructure of a conduit constructed in accordance with my invention. Fig. 2 is a sectional perspective view showing both the super and sub structure, the slot-rails in this instance being adapted to accommodate heavier traffic. Fig. 3 is a sectional top plan view of the preferred form of trolley. Fig. 4 is a detail section through one of the trolley-bearings on the line 4 4, Fig. 3. Fig. 5 is a detail of a modification.

Like letters of reference in the several figures indicate the same parts.

In the present structure I design to form the conduit of proper size to be laid directly on the cross-ties, for which purpose the height of the conduit should be approximately that of the height of the ordinary web-rails in common use, and I prefer to form the base of rolled iron with a flat bottom or bearing-surface A and upwardly-extending web A′, adapted to support and have rigidly attached thereto the angle-iron slot-rails B B′.

As shown in Fig. 2, the base A is laid directly on the cross-ties C, beneath which there is formed a subconduit D, having the top portion open and adapted to receive any debris from the conduit proper. To permit of a free exit or discharge of the debris from the conduit proper, it is formed with openings A^2 in the bottom, or, more properly, the whole bottom is cut away except at the points where the base rests on the cross-ties, as shown clearly in said Fig. 2. With this construction accumulations in the conduit proper immediately drop into the subconduit, which may be cleaned by flushing or otherwise at stated intervals. The conduit proper may be made in the form shown and described by the process of rolling. Hence not only are the advantages of an open-bottom conduit secured, but a large amount of metal is saved without sacrificing in any material degree the strength or rigidity of the upwardly-extending web.

In the preferred construction shown in Fig. 1 the slot-rails B B′ are adapted to interlock, so to speak, with the upwardly-extending webs, for which purpose a seat or seats A^3 are rolled in the outer side of the upwardly-extending webs, as shown on the right in Fig. 1, into which seat the lower edge of the downwardly-extending web B^3 of the slot-rail B is adapted to fit, and a corresponding seat B^4 is rolled in the inner side of the slot-rail for the edge of the upwardly-extending web A′. When in position, the two webs may be secured together rigidly by bolts B^5 or otherwise. When the slot-rail B is thus formed and united to the web, it becomes practically an integral part of the conduit structure and may be made to serve as a rail for the wheels of the vehicle by having its upper surface properly constructed with a tread and flange, as shown, or a simple tread, as in the ordinary T-rail. Where it is not desired to form a seat in the upwardly-extending web, the web of the angle-iron slot-rail may be simply united to the web of the conduit by a bolt, as B^6, Fig. 1, and the edge of the conduit-web seated in a recess or seat B^7, as shown on the left in said figure. So, too, where it is not desired to form seats in the manner described, the slot-rails may be mounted as shown in Fig. 2, wherein the base-flange of the conduit is provided with seats A^6 for the laterally-extending flanges B^8 of the slot-rails and the webs of the conduit-base and slot-rail may be connected by bolts in the ordinary manner, as shown in said Fig. 2. This construction provides a direct bearing for the combined slot-rail and wheel-rail on the cross-ties, which fact gives it some advantages, as will be understood by those skilled in the art.

The conductors in the present instance are made in the form of square tubes F, suspended in the conduit on hangers G, journaled in or

supported by insulators H, carried by brackets I, screwed or otherwise fastened to the inside of the webs. The conductors, being suspended in this manner, are free to yield to a limited extent, and in order to carry out the scheme of the invention, which allows of debris and accumulations to drop out by gravity, the conductors are preferably slotted on the under side, as shown clearly in Fig. 1, and the contacts pass into the conductors through this slot. In the preferred construction of contact a yielding trolley is formed, consisting of a body portion K, supported vertically in line with the conduit-slot and having hinged end members K′, to which the propelling or towing connections are preferably attached, thus allowing the body to maintain its position with relation to the conductors. The body K has central lateral extensions *k*, to the ends of which flexible bars L are centrally attached by bolts or otherwise, and on the ends of these flexible bars L brackets M are mounted for supporting the contacts proper.

The contacts proper, as shown, are formed by rollers N, running in the conductors and connected with the trolley by a bearing O, working between the rollers, with antifriction-rollers *o* for reducing the friction and resistance to forward movement. The construction is extremely simple, a relatively large circular aperture being formed in the bearing and the antifriction-rollers being preferably held against escape by the sides of the contact-wheels N. The flexibility of the bars L, combined with the limited free movement of the conductors themselves, allows the trolley to be supported at four widely-separated points and at the same time prevents any undue binding or wearing of the conductor or trolley-contacts in turning curves, and while it is desirable that the flexible bars should be supported at a center point only, it is obvious that they may be confined more or less by other connections with the body, located at different points, as, for instance, the connecting-pieces P, which unite the body and one end of each flexible bar, being located preferably on opposite sides of the center connection.

The conductor may be and preferably is covered with insulation on the outside, and consequently moisture accumulating thereon or debris dropping through or obstructions maliciously thrust through the conduit-slot can do no injury so far as the working current is concerned.

Obviously the suspended conductor need not be slotted at the bottom, as the position of the slot is immaterial, and in some instances it may be found preferable to locate it on the side, as shown in Fig. 5.

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

1. In a conduit for electric railways the combination with the integral conduit-base having the flat bottom or bearing-surface resting on the ties with portions intermediate said bearing-surfaces removed and two upwardly-extending webs one at each side integral with said base of the subconduit located beneath the ties in position to receive debris passing through the removed portions of the conduit proper and slot-rails supported by the upwardly-extending webs of the conduit; substantially as described.

2. The conduit for electric railways in combination with the integral base having the substantially flat bearing-surfaces resting on the ties with portions intermediate said bearing-surfaces removed, two upwardly-extending webs one at each side integral with said base and seats on the outside of said webs, of the slot-rails seating in said seats and the subconduit having the open top located beneath the ties; substantially as described.

3. In an electric railway, the combination with the slotted conduit of the tubular conductors suspended within the same so as to have a limited lateral movement and slotted, of the trolley-contact working within the conductor and the trolley projecting through the slot of the conduit; substantially as described.

4. In an electric railway, the combination with the conduit of the square tubular conductor slotted as described the hangers supporting said conductor the insulators having bearings in which said hangers are journaled and the brackets connected with the conduit for holding the insulators; substantially as described.

5. A trolley for electric-conduit railways consisting of the body having the joint or flexible end sections and the flexible bars centrally secured to said body on each side with contacts carried by said bars; substantially as described.

6. A trolley for electric-conduit railways consisting of the body having the joint or flexible end sections, the brackets projecting from the center of said body on each side, the flexible bars centrally secured to said brackets and the laterally-extending brackets on the ends of said bars on which the contacts are mounted; substantially as described.

7. A contact for trolleys consisting of the bearing having the relatively large aperture therein with wheels on each side of said bearing and antifriction-rollers in the bearing held against longitudinal movement by the wheels; substantially as described.

8. The combination with the oppositely-arranged tubular trolley-conductors suspended to have a limited lateral movement of the trolley having the oppositely-arranged flexible bars supporting contacts working within the conductors whereby lateral movement is compensated for and curves may be turned without undue friction; substantially as described.

HENRY BRANDENBURG.

Witnesses:
C. L. STINSON,
MARIE L. MCLAREN.