

(No Model.)

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J. D. GRIFFEN.
UNDERGROUND TROLLEY CONDUIT.

No. 581,281.

Patented Apr. 27, 1897.

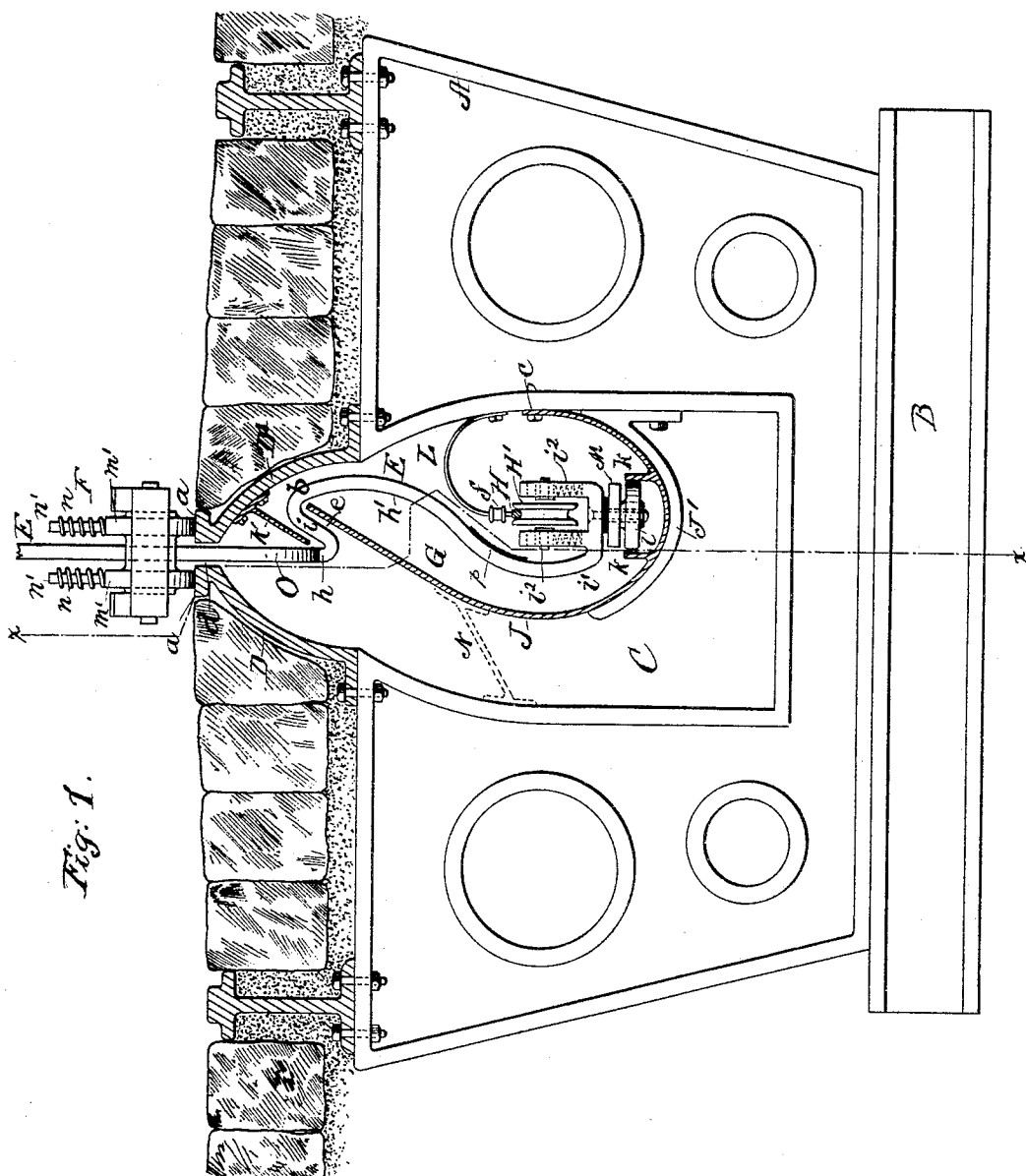


Fig. 1.

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INVENTOR

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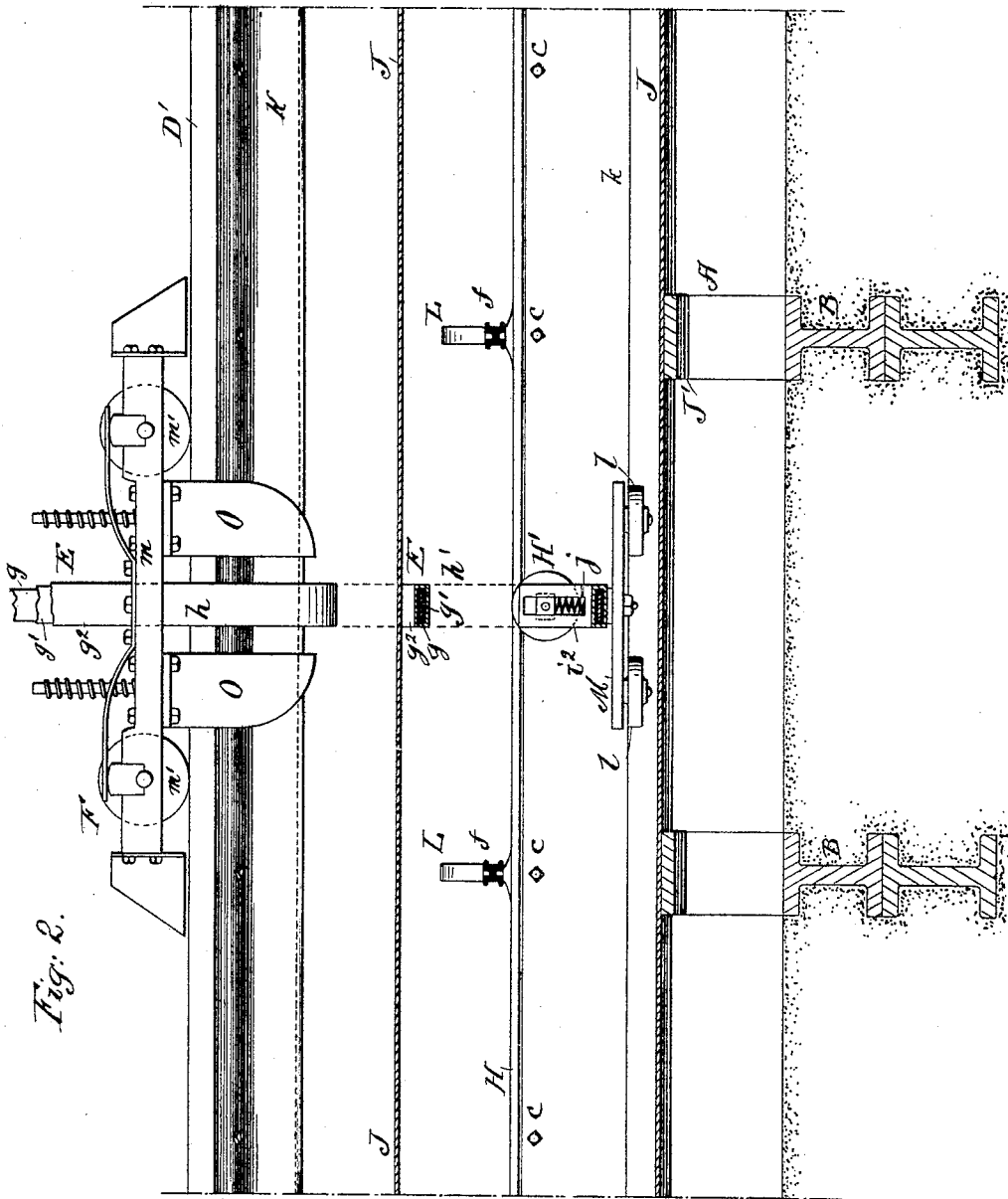
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WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN D. GRIFFEN, OF NEW YORK, N. Y.

UNDERGROUND-TROLLEY CONDUIT.

SPECIFICATION forming part of Letters Patent No. 581,281, dated April 27, 1897.

Application filed May 22, 1893. Serial No. 474,998. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. GRIFFEN, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Underground-Trolley Conduits, of which the following is a specification.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which like letters of reference indicate corresponding parts in both figures.

Figure 1 is a transverse sectional view of my new underground-trolley conduit, showing the street-surface, the railway-rails, and the preferred underground structure. Fig. 2 is a longitudinal sectional elevation taken on line *xx* of Fig. 1.

The object of my invention is to devise such a construction of an underground-trolley conduit that it shall possess the advantages of full protection to the electrical conductor from water, dirt, slush, snow, &c., and meet all demands for easy and convenient service and provide ample air insulation to prevent arcing and loss of electrical energy and yet be comparatively inexpensive, considering the stability and life of the structure; and to this end my invention consists principally of a trolley-conduit contained in an outer or main trench or conduit covered by the slot-rails, the trolley-conduit being formed with an opening at the top at one side of the trolley-arm slot, said top opening being protected by an offset inclined plate or flange attached to the structure.

The invention also consists in the construction of the trolley-arm and its auxiliary parts and in the special construction of the conduit, all as hereinafter described and claimed.

Referring to the drawings, A A represent yokes, preferably of cast-iron, supported by the sills or I-beams B B. These yokes will be placed in the trench at suitable distances apart, and they form in connection with interposed cement the main outer conduit or chamber C substantially the same as in the trenches used for cable-railways.

D D' are the continuous slot-rails bolted, riveted, or otherwise secured to the yokes over the trench or chamber C. These form

the slot *d* for the trolley-arm E and also the treads *a a* for the trolley-track F, if used.

Within the chamber C in the trench is formed the trolley-chamber G, which incloses the conductor H. This chamber G is formed by the casing J, the upper edge of which approaches the slot-rail D', leaving a top slot or opening *b* for the trolley-arm E. The opposite edge of the casing J is by preference secured to the yokes by bolts *c c* and is supported at the bottom by rests or arms J', secured by bolts to the yokes, as shown. The opening *b* is located at one side of the trolley-slot *d*, and the side of the casing J is held at a sharp angle, so that any dirt, slush, or snow which may drop through the slot upon the casing will not lodge thereon, but drop down to the bottom of the trench.

Above the opening *b* and also at one side of the trolley-slot *d* is permanently held the plate or flange K. This is offset from the upper edge of the casing J to form a space *e* for the trolley-arm, and it is bolted to the inner surface of the slot-rail D' and its lower edge projects somewhat below or overlaps and protects the upper edge of the casing J and is by preference held at an angle. This plate serves to prevent all foreign matter that may drip from the slot *d* from entering the trolley-chamber G.

The conductor H is supported by the spring-arm L and spool-insulators *f*, as shown clearly in the drawings.

The trolley-arm E is formed of a central plate *g* of copper, a covering *g'* of insulating material, and an outer casing *g'* of steel or other metal, and it is formed with a straight upper section *h* and an S-shaped lower section *h'*, the upper bend *i* serving to enter the space *e* and clear the adjacent edges of the casing J and flange K, the lower bend *i'* serving to form a support for the journal-plates *i² i²* for the trolley-wheel H', which, as here shown, runs beneath the conductor, though an overrunning trolley-wheel may be used, if desired.

The trolley-wheel is held in slotted bearings upon springs *j*, which hold the wheel up in contact with the conductor, and these springs, in connection with the spring-arms L, insure continuous contact.

In some cases I shall employ a lower guide for the trolley-arm, which may be variously constructed. In this instance said guide comprises flanges $k\ k$ at the bottom of the casing J, and a plate M, secured to and insulated from the trolley and guide wheels l , journaled at the ends of the plate to run between the said flanges $k\ k$.

The trolley-arm may be carried by the motor on the body of the car, or it may be carried by a small truck F, which runs upon the slot-rails and is connected to the car body or motor. (Not shown.) This truck comprises the body m and wheels $m'\ m'$. The trolley-arm is secured in the center of the body in a slot, and the truck is held down upon the track by springs $n\ n$ on rods $n'\ n'$, which enter the body of the car, so that the truck may have a slight up-and-down movement without materially affecting the trolley-arm.

In some instances I may brace the casing J by arms N, (shown in dotted lines in Fig. 1,) but I prefer to use only the supports J', for in such case there will be no cross-braces to obstruct clearing the trench as occasion requires.

In front and rear of the trolley-arm are carried by the truck F or the car the guards O O, which run in the slot d and clear the same and prevent wear upon the trolley-arm.

Instead of the wheel H' a brush, plate, or shoe may be used, and the trolley-arm may be provided with a sheet of insulating material, as at p , if found necessary.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An underground-trolley conduit comprising a main trench formed of metal yokes set at intervals apart in the ground, the intermediate space being closed to form a continuous main trench, slot-rails mounted on said yokes and a diaphragm forming a trolley-casing closed at its bottom and sides and fastened in and along the said main trench, the said trolley-casing having an opening or slot at its top near one side of the main trench, and a separate guard-plate secured to the structure above the trolley-casing the adjacent edges of the said guard-plate and the diaphragm of the trolley-casing being in substantially the same horizontal plane and offset or spaced therefrom to form a second or interior slot, in combination with a trolley-arm bent to form an angle below said guard-plate, and also bent to form another angle above the upper edge of the trolley-casing, substantially as described.

2. The yokes A which in part form the main trench, and the supports J' secured to said yokes within the trench, in combination with a casing J secured at one edge to the said yokes and held upon the said supports J', the opposite edge of the casing being curved upward toward the top of the trench substantially as described.

Signed at New York, in the county of New York and State of New York, this 19th day of May, A. D. 1893.

JOHN D. GRIFFEN.

Witnesses:

WM. CLINTON BURLING;
H. A. WEST.