

No. 606,968.

Patented July 5, 1898.

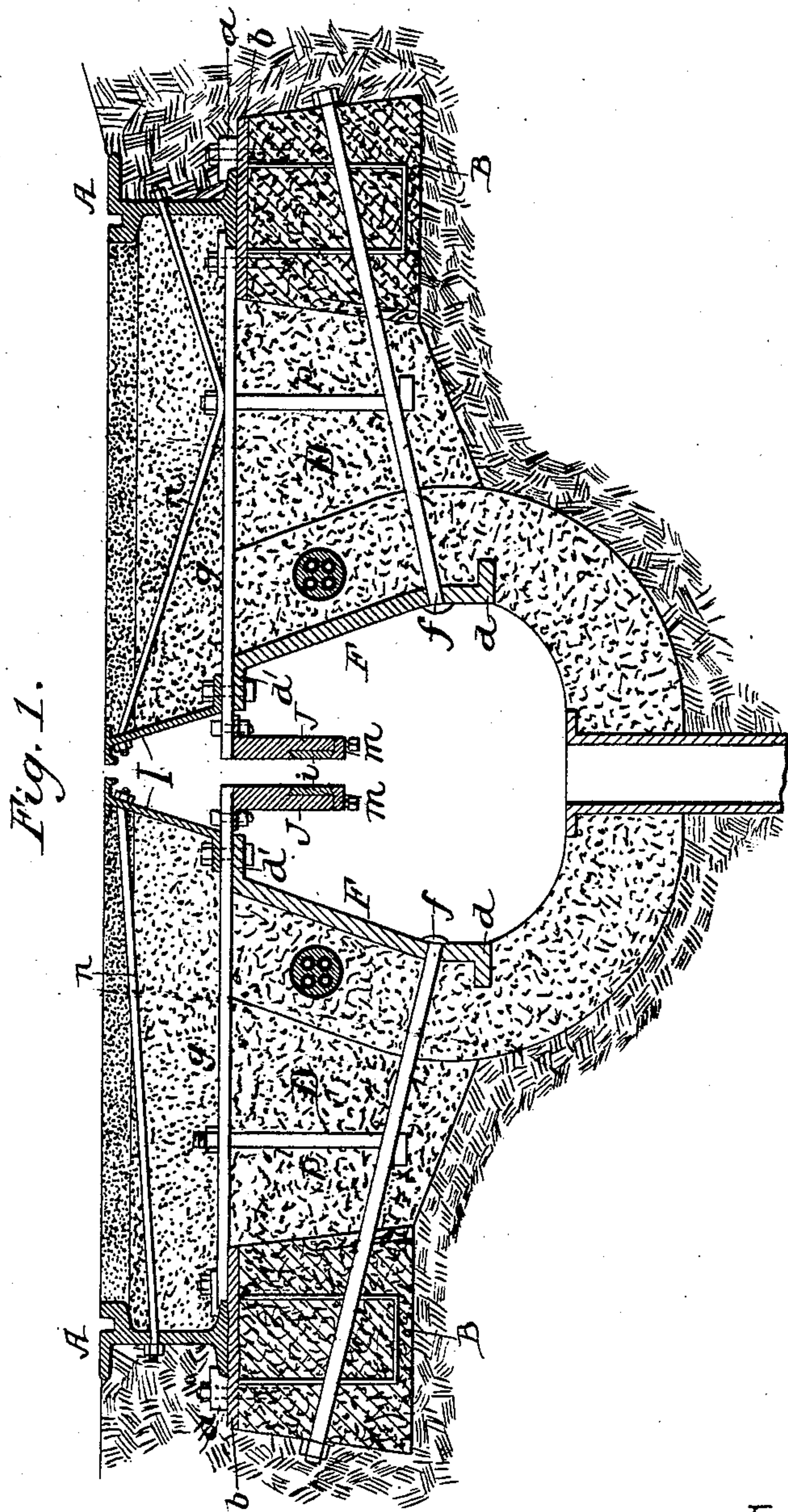
P. HEVNER.

PERMANENT WAY FOR RAILWAYS.

(Application filed Mar. 24, 1897. Renewed Apr. 12, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
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Charles De Cou.

Inventor:
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by his Attorneys,
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2 Sheets—Sheet 2.

Fig. 2.

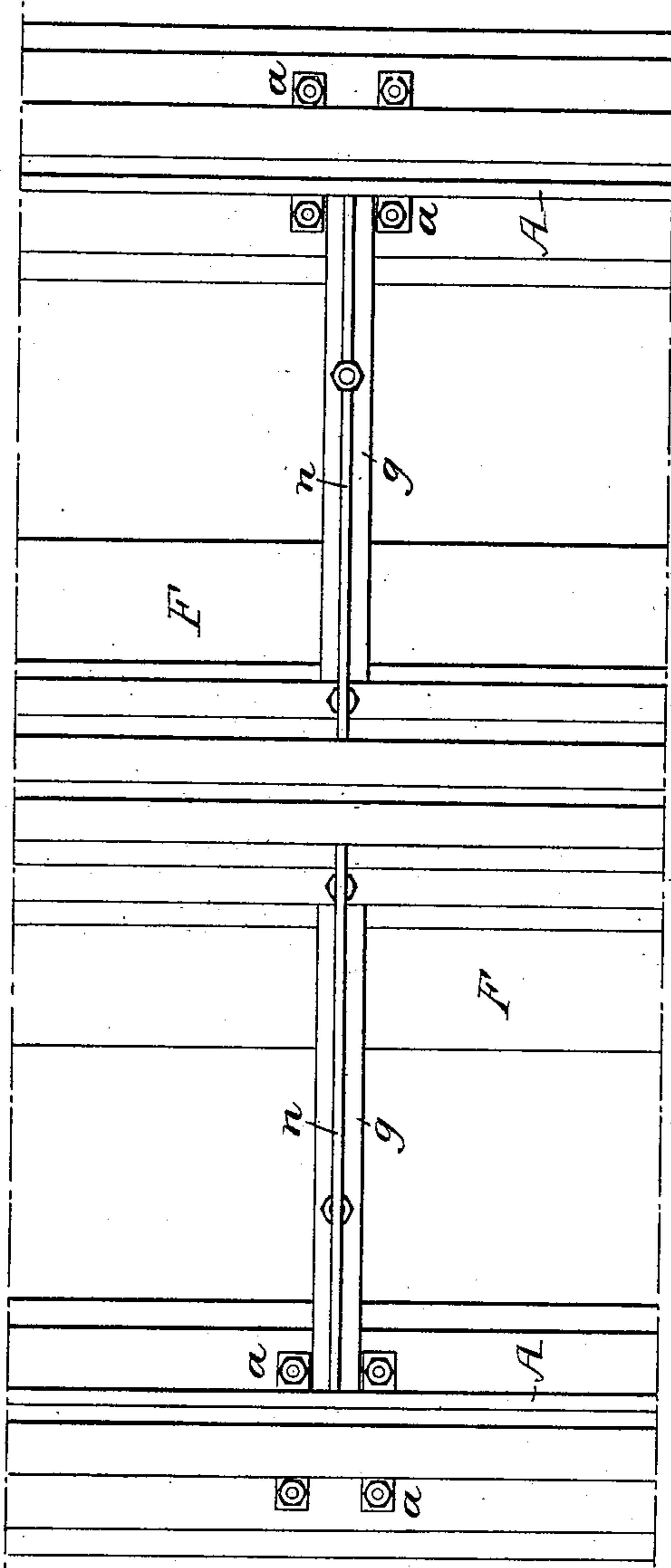
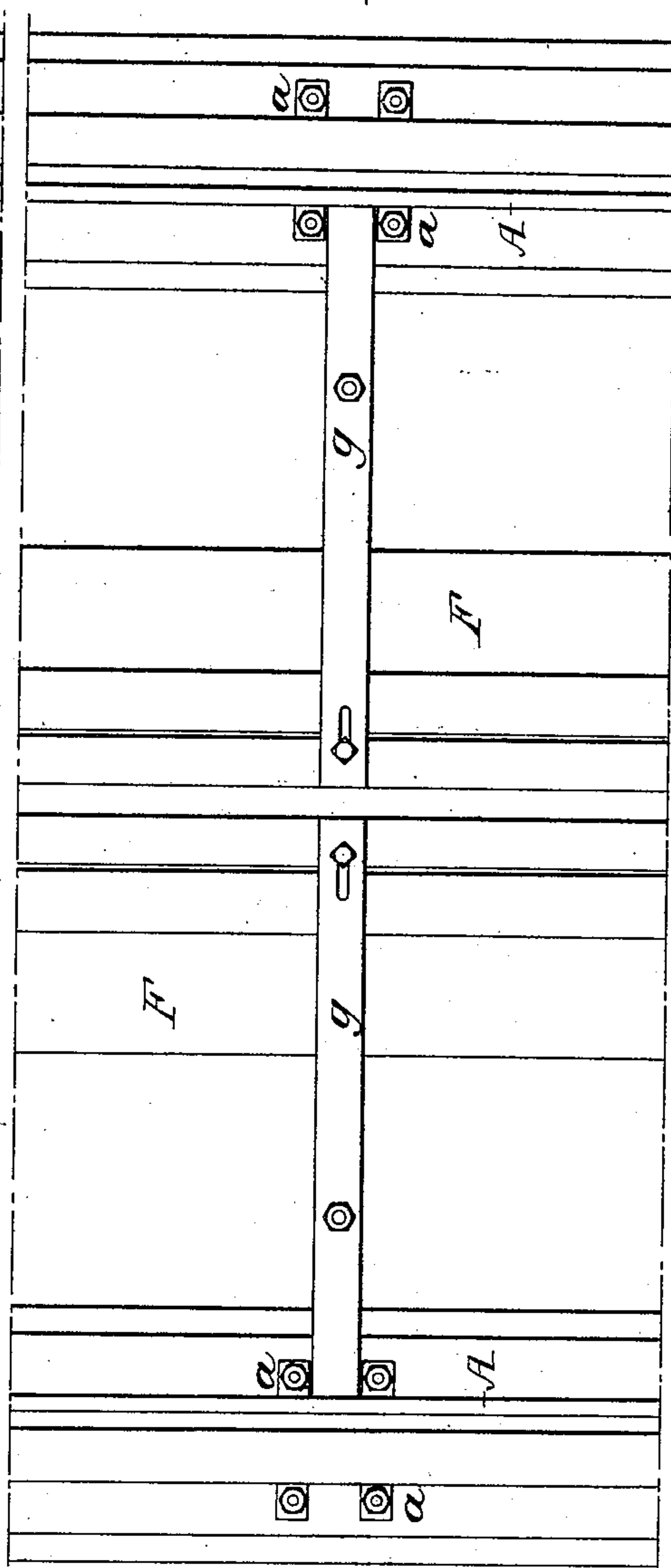


Fig. 3.



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UNITED STATES PATENT OFFICE.

PETER HEVNER, OF PHILADELPHIA, PENNSYLVANIA.

PERMANENT WAY FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 606,968, dated July 5, 1898.

Application filed March 24, 1897. Renewed April 12, 1898. Serial No. 677,377. (No model.)

To all whom it may concern:

Be it known that I, PETER HEVNER, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain
5 Improvements in Permanent Ways for Railways, of which the following is a specification.

The object of my invention is to provide a track or conduit structure for underground electrical or cable railways which while combining the maximum of strength, rigidity, and durability can be laid with rapidity and at a comparatively small cost. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—
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Figure 1 is a transverse section of an underground electric-railway structure in accordance with my invention. Fig. 2 is a plan view of the same with the concrete and surface paving material removed, and Fig. 3 is a similar view showing the slot-irons and their bracing-rods removed.
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A A represent the opposite rails of the track, which may be of any desired character, those represented being the girder-rails now commonly used in street-railway construction. The lower flanges of each of these rails are secured by means of clips *a* to a plate *b*, which is securely attached to a girder or pier B, of artificial stone or concrete, these girders extending throughout the length of each rail and resting in suitable trenches dug in the street for their reception. If piers are used instead of girders, said piers will be properly spaced throughout the length of the track, this being regarded as an equivalent construction. The entire space between the rails and between the opposite rail-supporting girders or piers is dug away to form a
40 trench for the reception of a mass of concrete D, in which are embedded the opposite walls F of the conduit, which converge toward the top and have external base-flanges *d* and internal top flanges *d'*.

Each wall F of the conduit is connected by stay-bolts *f* to the girder B on that side of the conduit, and the top-plates of each girder are also connected to the upper flanges of the corresponding wall of the conduit by means
50 of stay-bars *g*, the outer ends of these stay-bars being preferably secured to the cap-plates of the girders by the same bolts which

secure the rail-clips for the inner flanges of the rails.

The bolts which secure the inner ends of the stay-bars *g* to the upper flanges of the conduit-walls also secure the base-flanges of slot-irons I, which are mounted upon the top of the conduit-walls and which preferably converge toward the top, so that their flanged upper edges form a slot of the desired width for the passage of the conductor-bar on the car.
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The inner ends of the stay-bars *g* project beyond the top flanges of the conduit-walls and serve for the support of depending bars J, which carry the conductors *i*, the latter being in the present instance in the form of flat plates secured in position on the bars J by means of detachable bars *m* at the bottom
70 of the latter.

Both of the plates *i* may be positive conductors for conveying current to the conductor-bar on the car, the return being through the rails of the track, or one of the plates *i* may constitute the positive and the other the negative conductor of the circuit.
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The slot-irons are connected to the corresponding rails of the track by means of stay-bolts *n*, which may extend directly from the slot-irons to the rails, as shown at the left-hand side of Fig. 1, or may be deflected in their course, so as to be secured to the stay-bars *g*, in which case the vertical stay-bolts *p*, which connect the transverse stay-bolts *f* and bars *g*, may perform the additional function of connecting the stay-bolts *n* to said bars *g*.
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The conduits carrying the feed-wires can be conveniently laid in the concrete mass on each side of the conduit-walls F.
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The conduit-walls F may have flanged ends, so that the successive lengths of the conduit can be united by ordinary bolts and nuts.

It will be apparent that when the formation of the trench in the street is completed the laying of the track and conduit can be rapidly proceeded with, the girders, with their cap-plates and anchors, being readily formed by molding the artificial-stone composition in suitable boxes, and the operation then involving simply the proper assembling of the parts and the screwing up of the nuts upon the respective brace-bolts, after which the concrete
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filling D is put in place and the surface-paving between the tracks applied thereto, so that the completed structure constitutes practically a solid homogeneous mass in which all the parts are held with positive rigidity in their proper relations to each other.

The inner projecting ends of the brace-bars *g* are slotted, as shown in Fig. 3, for the reception of bolts, whereby the conductor-bars *J* are secured thereto, so that said conductor-bars *J* can be moved from and toward each other to accord with the requirements of any particular case.

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

1. The combination of the track-rails, girders beneath the same, a conduit disposed between the rails and below the street-surface and composed in part of opposite side walls and in part of a mass of concrete interposed between the rail-girders and conduit-walls, and extending beneath the latter to form the bottom of the conduit, and braces whereby both the upper and lower portions of each of

the side walls of the conduit are confined laterally to the rail-girders, substantially as specified.

2. The combination of the track-rails, supporting-girders therefor, a central depressed conduit, bars connecting the upper portions of the conduit-walls to the girders and extending inward beyond the walls of the conduit, and depending conductor-bars mounted upon said inwardly-projecting portions of the brace-bars, substantially as specified.

3. The combination of the track-rails, girders supporting the same, a centrally disposed and depressed conduit, upper and lower braces connecting the walls of said conduit to the track-supporting girders, and vertical braces connecting said upper and lower transverse braces, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PETER HEVNER.

Witnesses:

JOS. H. KLEIN,
F. E. BECHTOLD.