(No Model.) 2 Sheets—Sheet 1.

J. L. MEIGS.

ELEVATED RAILWAY STRUCTURE.

No. 488,283. Patented Dec. 20, 1892.

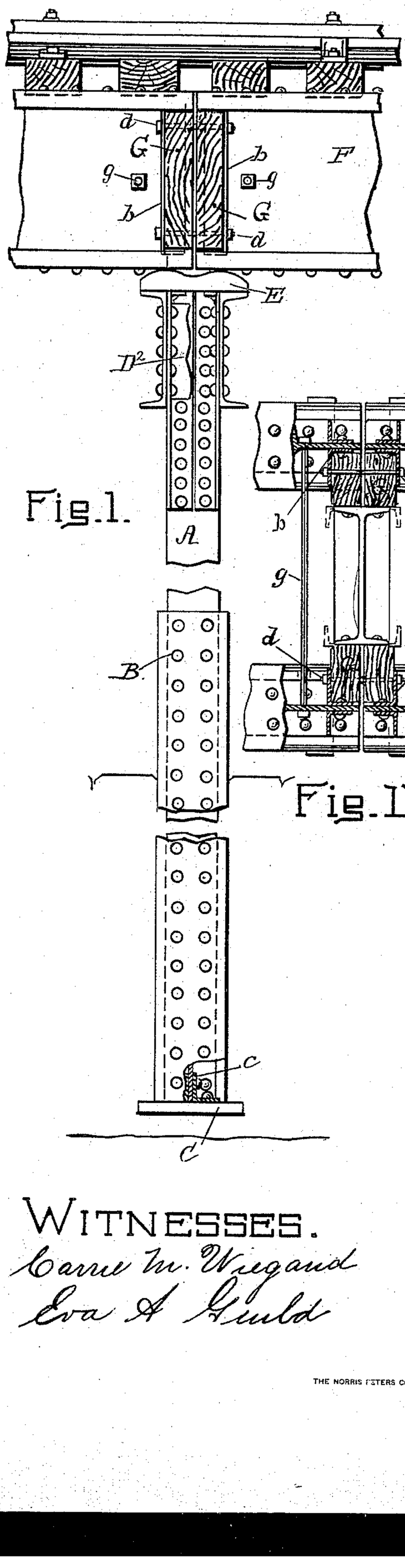

Fig. 1.

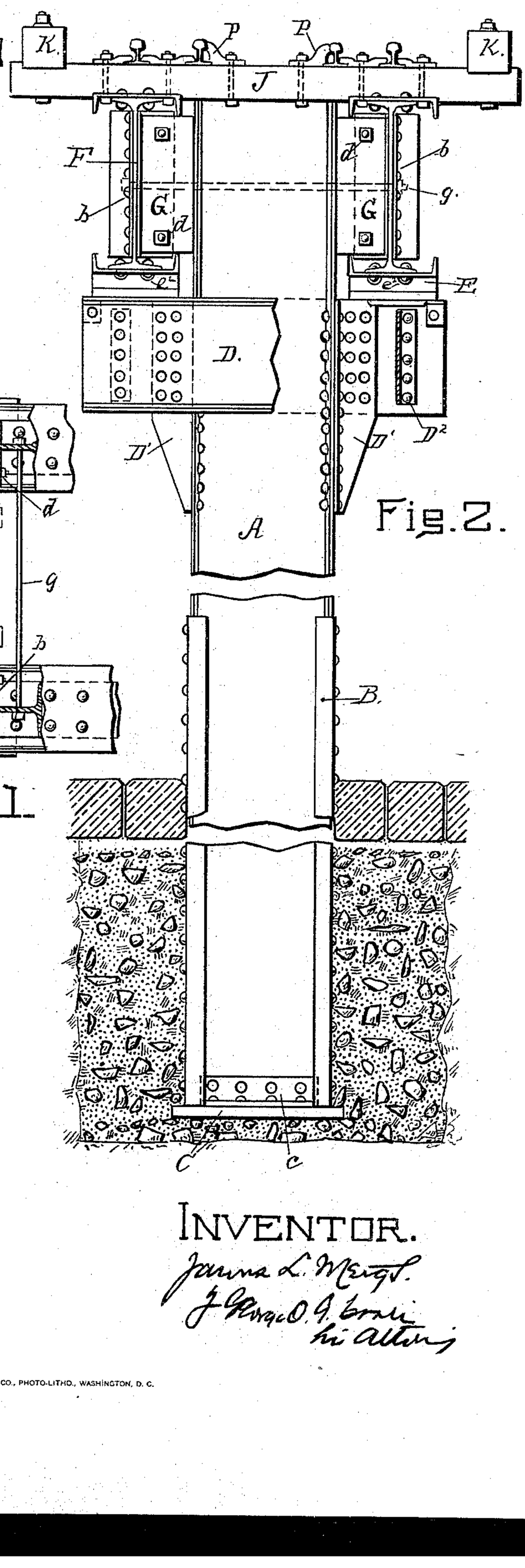

Fig. 2.

Fig. 11.

WITNESSES.

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(No Model.) 2 Sheets—Sheet 2.

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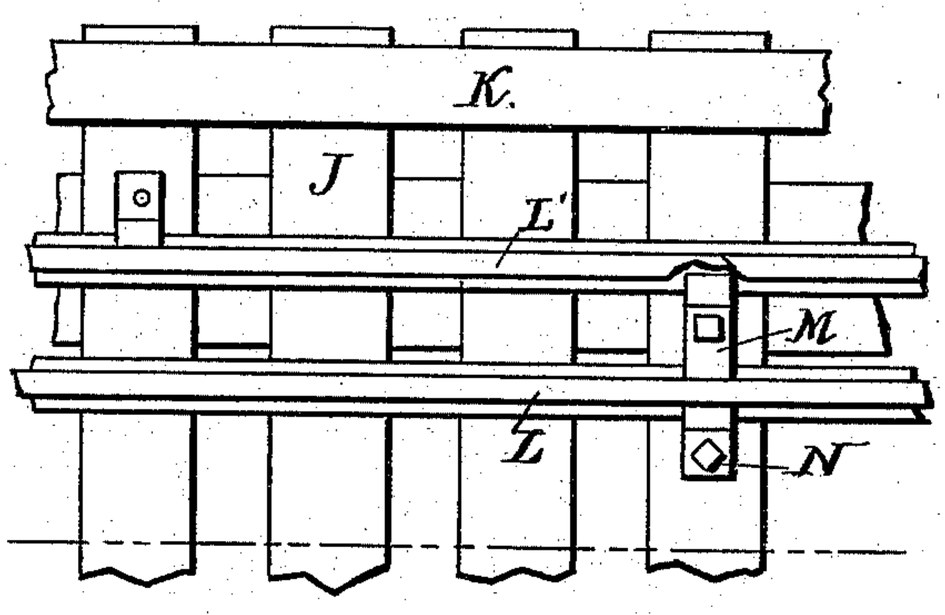

Fig. 3.

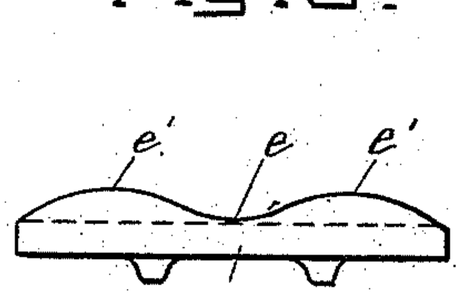

Fig. 4.

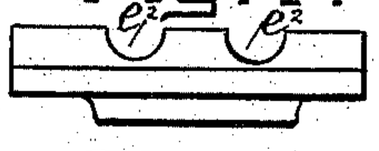

Fig. 5.

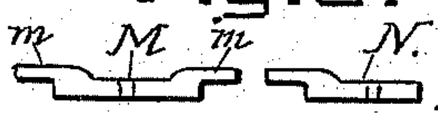

Fig. 6.

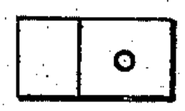

Fig. 7.

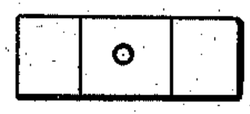

Fig. 8.

Fig. 9.

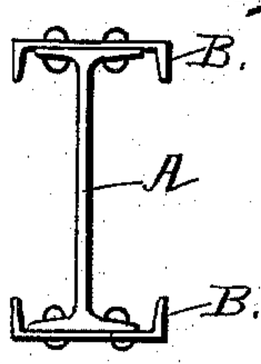

Fig. 10.

WITNESSES.

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UNITED STATES PATENT OFFICE.

JAMES L. MEIGS, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO WALTER M. LOWNEY, OF SAME PLACE.

ELEVATED-RAILWAY STRUCTURE.

SPECIFICATION forming part of Letters Patent No. 488,283, dated December 20, 1892.

Application filed February 15, 1892. Serial No. 421,550. (No model.)

To all whom it may concern:

Be it known that I, JAMES L. MEIGS, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Elevated-Railway Structures, of which the following is a specification.

My improvement relates to certain details in the construction of the posts and supports for the girders, the connection of the girders with each other and the attachment of rails thereto, and will be fully understood by the description below given.

In the drawings Figure 1 represents a side elevation of the post showing a portion of two girders as they are joined near the top of the post. Fig. 2 is a cross section of the structure showing the post and the means for supporting the girders in elevation thereon, the post in this case being represented as set into a bed of concrete below the street level. In each of these figures, portions of the structure are broken away to show the details of construction as will be readily understood. Fig. 3 is a plan showing a portion of the track and the means for connecting it to the structure. Figs. 4 and 5 show the friction plates on which the ends of the girders are to rest, and Figs. 6, 7, 8 and 9 show clamps for clamping the track in place. Fig. 10 is a cross section showing the construction of the lower part of one of the posts. Fig. 11 is a horizontal section taken on a line passing through the two upper bolts *d*.

A is the post. It consists of an I beam of ordinary construction the flanges of which are strengthened for a portion of its height by the addition of a channel bar B riveted to each edge thereof as shown, (see Fig. 10.) This post is mounted in the ground in a bed of concrete or held up in any desired way. C is a plate connected to the bottom of the post A by angle irons *c*, to assist in holding the post in the ground.

Near the upper end of the post A, two channel bars D are attached to it forming cross bars for the purpose of supporting the girders and the track to be laid thereon. These cross bars are connected to the post by means of angle irons D′, which are riveted both to the post and to the cross bars, as shown, two angle irons being used to support each cross bar. These angle irons D′ lie between the two cross bars D so that they do not disfigure the structure. Short lengths of channel bar iron D^2 are used to connect the adjacent ends of the cross bars D together and form cross braces. Two friction plates E are mounted on these channel bars, one on each side of the post A. Each is adapted to support the two adjacent ends of two girders F. The construction of these friction plates will be understood by reference to Figs. 4 and 5. Fig. 4 is a side elevation corresponding to the view shown in Fig. 1, while Fig. 5 is an end elevation thereof. The peculiarity of these friction plates lies in the fact that they are corrugated. Each has a corrugation or depression *e* extending across the middle of it, the two projecting parts *e′*, *e′* being curved as shown, for the purpose of enabling the ends of the girders F to ride over them freely when a train is in motion over an adjacent portion of the structure. While the load is, for example, upon say the middle of one of the girders F, it will tend to depress the middle of the girder and elevate slightly the extreme end which rests upon the post, and as the load reaches the end of the girder on top of the post shown in Fig. 1, the end will become horizontal again. Thus the tendency of the end of the girder is to rock upon the friction plate. It will be readily seen that if the plates E had a square corner instead of being rounded as shown, there would be a constant tendency to wear the sharp edge of each friction plate, and also to cut the end of the girder. The friction plate above described obviates this trouble.

The girders F rest at each end upon such a friction plate and each pair of girders is held together parallel and with the next pair in the following manner. Between the side of the end of each girder and the side of the top of the post A, is a block G of wood or other material capable of taking up vibrations, and wide enough to fit easily between the girders and post. Two of these blocks attached to the adjacent ends of two girders are preferably bolted together and to the angle irons *b* as shown in Figs. 1 and 11, or instead of two blocks, a single block may be

used overlapping the joint between said adjacent ends.

g are bolts which pass across from one girder to the other, as shown, thereby clamping the blocks and the girders which lie side by side, together and to the post.

I provide angle irons *b* on each side of each end of each girder (see Fig. 11 where these angle irons are shown in horizontal section.) These angle irons serve to hold the blocks G in place as well as to strengthen the ends of the girders and prevent them from being crushed when holding the load. The bolts *d* which are also shown in Fig. 11, may be used either to hold each block of wood to the angle iron which lies against it, or may pass through a pair of blocks and two angle irons as shown, but in this case each bolt must be loose enough to allow for the end play of the girders while the load is passing over the track. By this means I fasten the girders securely in place together and against the upright A, and yet allow them all the freedom and motion necessary, and moreover I prevent much of the vibration which helps to shorten the life of such a structure.

I provide slots e^2 in friction plate E in order to allow the rivet heads which attach the channel bars to the **I** beams forming the girder F, to slide easily.

Upon the girders F are placed the ties J and along the edge of the ties I prefer also to place guard beams K. I also prefer to use a guard rail L in addition to the ordinary rail L′, and as a matter of convenience in attaching these to the ties, I use a double clamp M, one end of which *m*, is shaped to hold one rail in place, while the other end *m′* holds the second rail in place, as will be understood by reference to Figs. 2, 6 and 8. This clamp, used in connection with other clamps N of the shapes shown in Figs. 7 and 9, and an occasional brace P (see Fig. 2), serve to hold the track securely in place.

One advantage of the construction above described, is in its lightness and its corresponding economy. The structure is designed particularly for use with single electric cars whether supplied with storage batteries or with trolleys, and it is intended more particularly for use in those places in which it is desirable to remove the cars from the streets so as to allow the streets to be used for teaming only. I believe however, that the structure is capable of very general use where it is desirable to run frequent trains of small cars. Moreover in many places, for example in the country, the road may be elevated but a short distance above ground, say a few feet, and so prevent any chance of the interruption of travel through the blocking of the road by snow, and also do away with the expense of grading.

What I claim as my invention is,

1. In an elevated railroad construction, an **I** beam A in combination with channel bars D and angle irons D′, said angle irons lying parallel with said **I** beam A, and said channel bars D lying at right angles thereto and being riveted to said angle irons D′, the whole furnishing a support for the girders and track, as set forth.

2. In an elevated railroad structure, in combination with girders F the doubly curved friction plates E suitably supported and each carrying the adjoining ends of two girders F, the end of each girder being supported by one of the curved surfaces on said friction plates and being in lineal contact therewith, the line of contact being crosswise of said girder, all as and for the purposes set forth.

3. In an elevated railroad structure, the posts A and girders F supported by said posts and lying parallel, in combination with blocks G of the kind described, each block lying between the post and the side of a girder, all as set forth.

4. In an elevated railroad structure, in combination, two girders lying end to end, and two wooden blocks G, each attached to one of said girders, the two being attached together all substantially as described.

5. In a railroad structure, the friction plates E curved as described and grooved in a line at right angles to the axis of said curvature, all as and for the purposes set forth.

In testimony whereof I have hereunto subscribed my name this 12th day of February, 1892.

JAMES L. MEIGS.

Witnesses:
GEORGE O. G. COALE,
JOSEPH DESMOND.