# L. LOTZ.

## Elevated Railway.

No. 160,831 Patented March 16, 1875.

Fig: 1.

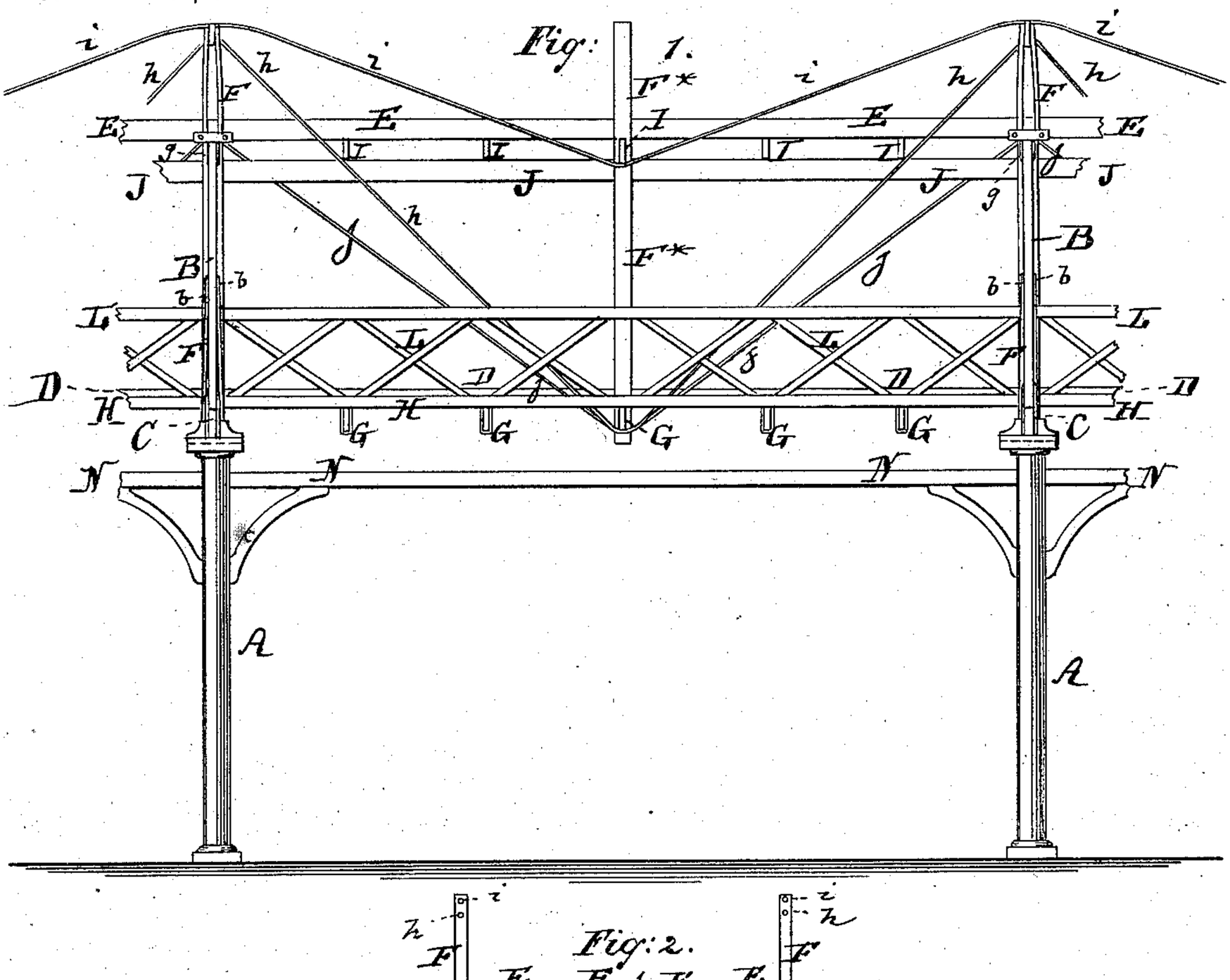


Fig: 2.




Witnesses:

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# UNITED STATES PATENT OFFICE.

LORENZ LOTZ, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN ELEVATED RAILWAYS.

Specification forming part of Letters Patent No. **160,831**, dated March 16, 1875; application filed August 11, 1874.

*To all whom it may concern:*

Be it known that I, LORENZ LOTZ, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Elevated Railroad, of which the following is a specification:

Figure 1 is a side elevation of my improved elevated railroad, and Fig. 2 is a vertical transverse section of the same.

Similar letters of reference indicate corresponding parts in all the figures.

The invention relates to a new arrangement of arches, chords, braces, and beams for sustaining a quadruple railroad-track, two pairs of tracks being vertically above the other two pairs, and all the parts being combined and braced in such a way that a stable and reliable structure will be produced.

The road is supported on columns or piers A A, which are planted at opposite sides of the street in pairs, each pair being arranged to support a transverse arch, B. The arches and the corresponding columns are arranged at a suitable distance apart longitudinally. The ends of each arch B rest on the two columns A A, as shown in Fig. 2, and are connected with the ends of a chord, C, which chord constitutes the support for the lower double pair of rails D D. The chord C is braced in the center by a pendant, *a*, whose lower end rests on braces *b b* that extend through blocks *d d* placed under the chord, and are bent from said blocks toward the arch, as clearly shown in Fig. 2. By this system of braces *b b* the chord C is properly strengthened and supported in the middle, and at the same time the arch B is held down to its place. Toward its ends the chord C is further supported by the braces *e e*, which extend upwardly from the posts. The top of the arch B is flattened, and serves to sustain the upper double pair of rails E E, which is also clearly shown in Fig. 2. This flat top of the arch is connected with the chord C by means of a pair of uprights, F F, whose lower ends are bolted to the chord, while their upper parts are bolted to the upper part of the arch B. The center of the top of the arch is, moreover, sustained by a pendant, *f*, which rests on a V-shaped brace, *g*, whose ends connect with the junction of the uprights F and arch B, as clearly shown in Fig. 2. Thus it is seen that as far as the structure of each arch is concerned, this road is constructed with a view toward great strength and stability.

It will be observed by reference to Fig. 2 that the double set of rails D D E E are both between the uprights F F.

Between every pair of arches B B the rails D D are held in place by, and supported on, cross-beams G G, which are, at their ends, suspended from longitudinal girders H H, which rest on the chords C C. The upper rails D D are, between every pair of arches, supported on cross-beams I I, that rest on girders J J, which connect with the upper parts of the arches and with the uprights F.

A railing, L, may be erected on each girder H for improving the appearance of the road, and also for giving greater stiffness to the uprights F F, with which it connects. A similar railing may, if desired, be also arranged at the side of the upper set of tracks, but the same is not shown in the drawing.

Midway between every two arches is connected with the girders H and J a pair of uprights, F*. Each of these uprights connects at its lower end, by braces *h h*, with the upper ends of the uprights F, as shown in Fig. 1, and its upper part also connects, by braces *i i*, with the upper parts of the uprights F, as is also shown in Fig. 1. Transversely between every pair of uprights F* there is also a vertical brace, M, which extends from the upper central beam I to the lower central beam G, and which, at its lower end, connects, by braces *j j*, with the upper parts of the arches B B, between which it is arranged, as is also indicated in Fig. 1.

In this manner a railroad is produced which in every respect will be reliable, and which will be able to accommodate twice as many trains as any feasible elevated railroad heretofore proposed.

The posts A A, which are on the same side of the road, may be connected together for greater stability by horizontal bars N; but these bars may be omitted, if desired, or may be substituted by gas-pipe for conducting gas to lamps, that may be supported at suitable intervals on the arches or other parts of the road.

I claim as my invention—

1. In combination with the transverse chord C, a superposed arch, B, the central pendant *a*, and bent braces *b b*, all arranged substantially as described.

2. The arch B, combined with the chord C, for supporting four lines of railroad-track, said arch being on top, and there combined with the pendant *f* and V-shaped brace *g*, substantially as specified.

3. The uprights F F, combined with the arches B, the chords C, braces *n i j*, and uprights F* and M, substantially and for the purpose herein described.

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Witnesses:
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