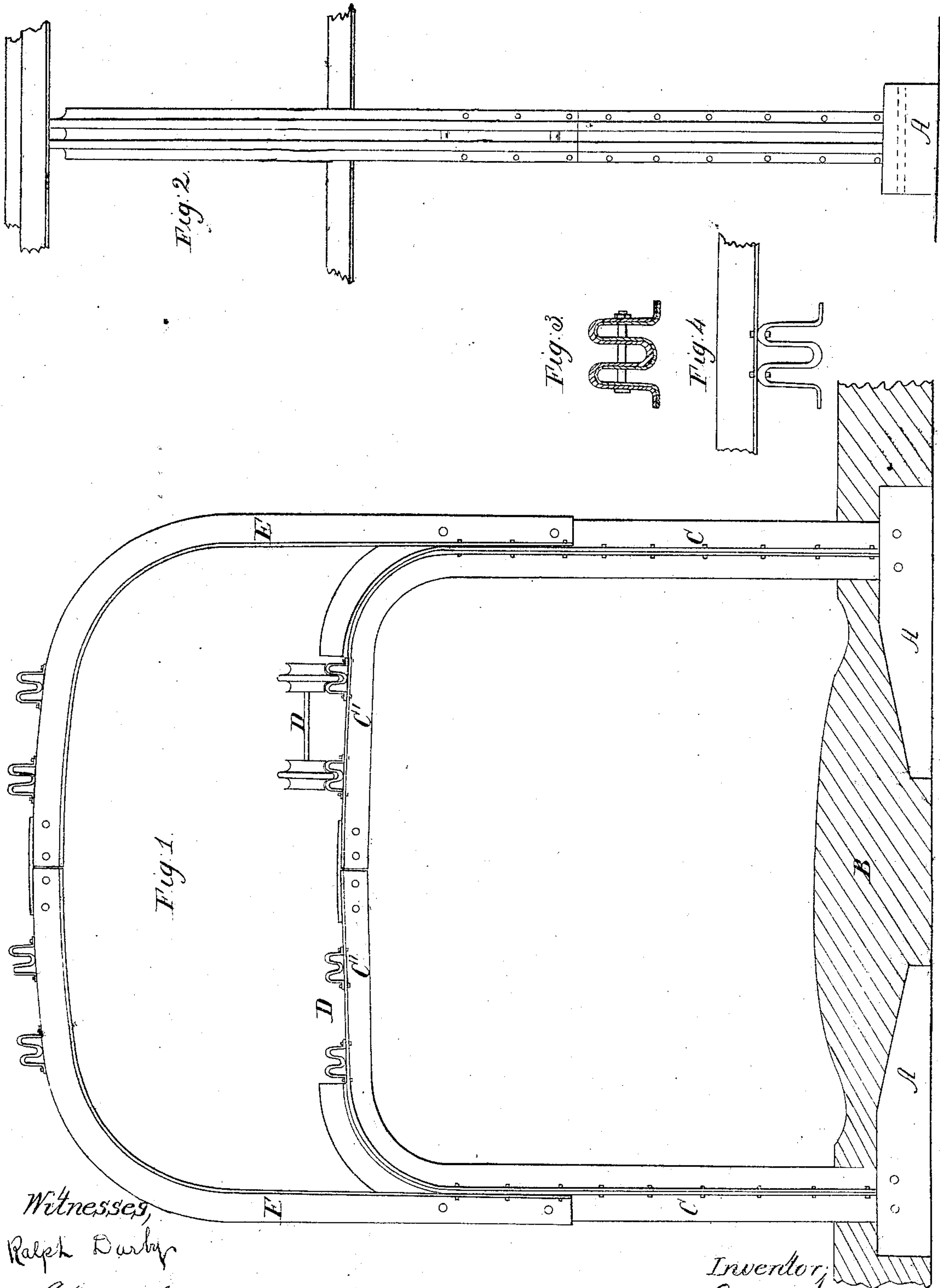


*R. Montgomery,
Elevated R.R.,*

N^o 57,949,

Patented Sept. 11, 1866.



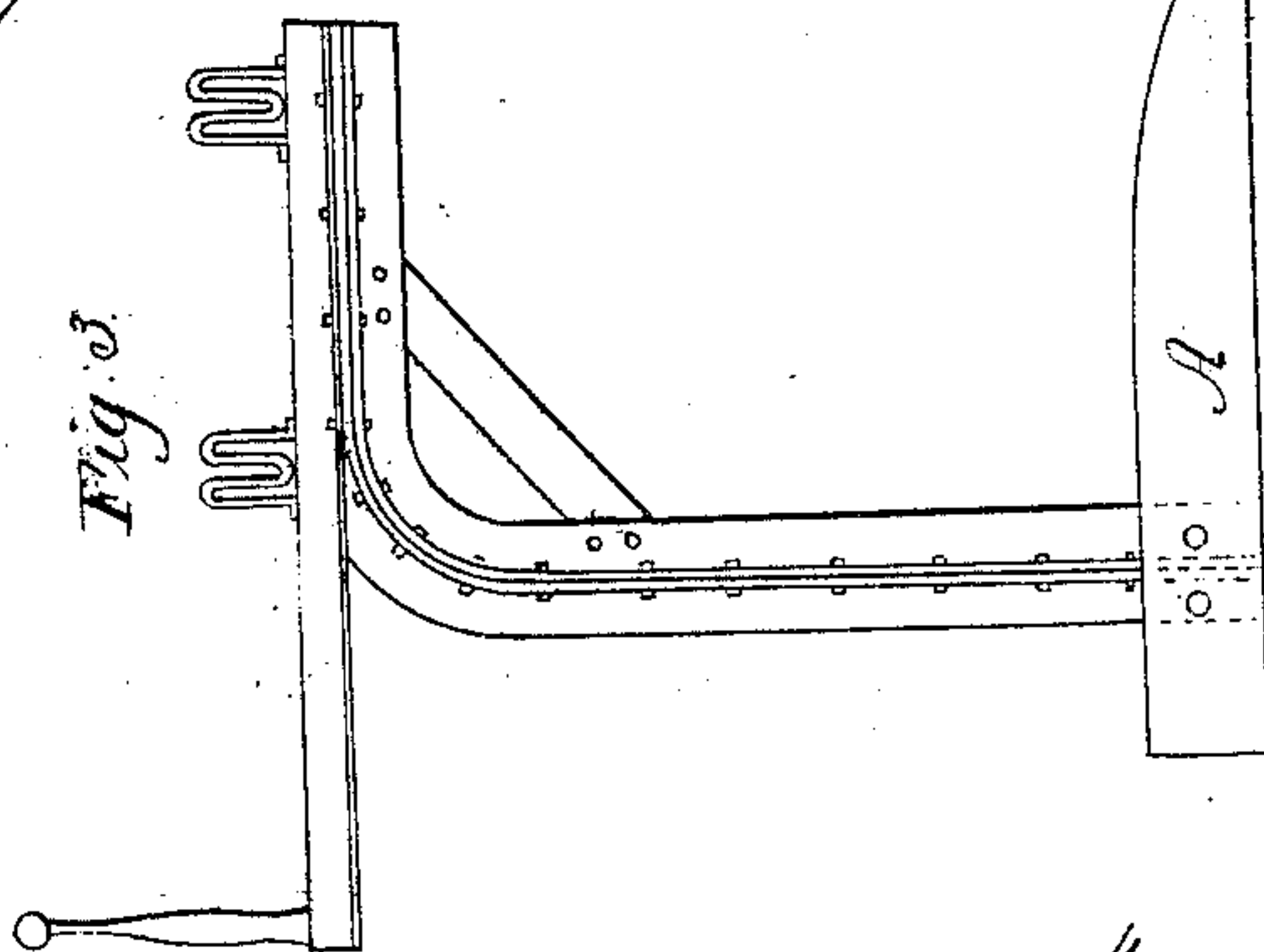
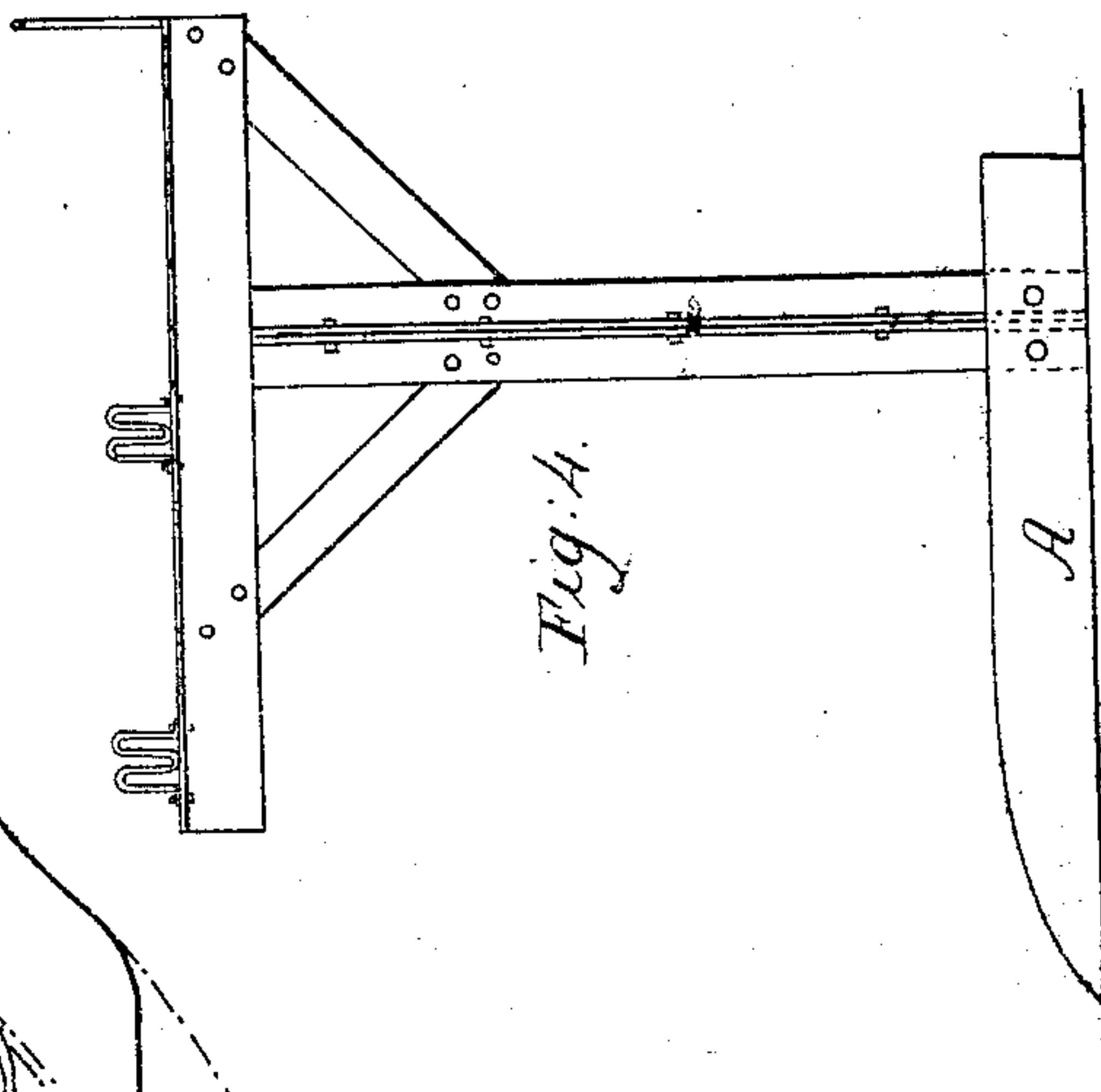
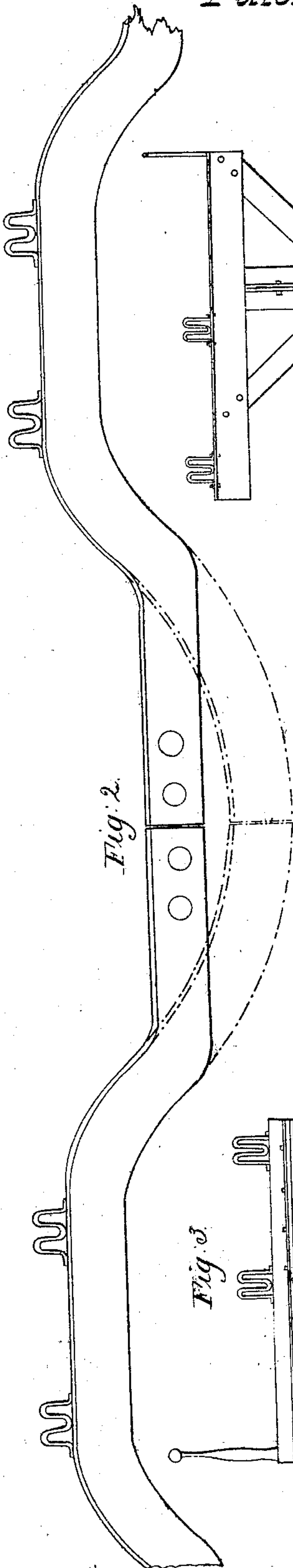
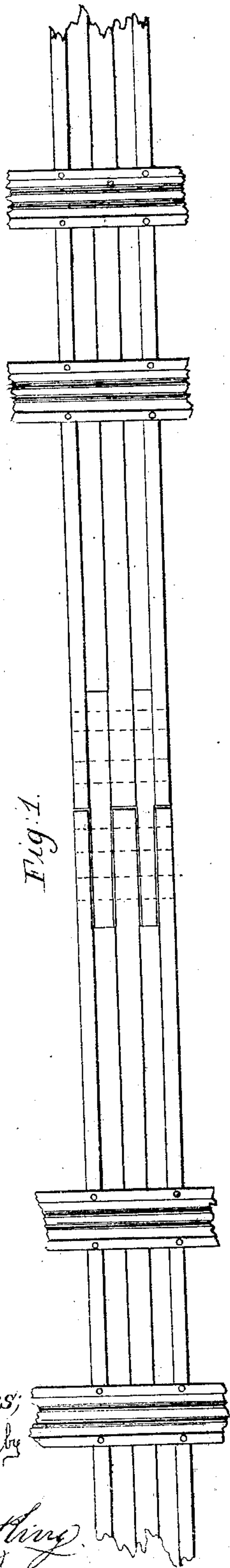
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UNITED STATES PATENT OFFICE.

RICHARD MONTGOMERY, OF NEW YORK, N. Y.

IMPROVEMENT IN AERIAL RAILROADS.

Specification forming part of Letters Patent No. 57,949, dated September 11, 1866.

To all whom it may concern:

Be it known that I, RICHARD MONTGOMERY, of the city, county, and State of New York, have invented a new and useful Improvement in Aerial Railroads; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

On Plate I, Figure 1 is a representation, in elevation, of a double line of tracks, one above the other. Fig. 2 is a view of the same, seen transverse to the line of the direction of the road; Fig. 3 and 4, details of certain parts of the structure.

On Plate II, Fig. 1 is a vertical, and Fig. 2 a horizontal, view of the beam or cross-tie, in which the beam or cross-tie is curved instead of flat, as seen in Fig. 1, Plate I. Fig. 3 is a view in elevation, using a curved beam as a support when the structure is intended to extend partly over the carriage-way and foot-walk. Fig. 4 is a view of a similar kind supported upon a vertical column.

In all these figures like letters refer to like parts.

The object of my invention is the construction of a strong, light, and cheap aerial railroad by the use of corrugated beams of iron or other metal.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In Fig. 1, Plate I, I show an elevated view of this road with two double-track roadways, one above the other. The object of this double way is to accommodate the wants of the public, so that, while one road shall supply the requirements of those who need to travel but short distances, the other will suit those who have much longer distances to travel without stopping. In other words, one of these lines may be used as an accommodation-train, while the other, having fewer stoppages to make between its termini, and therefore capable of running at higher speed, may be called the "express-train." It is not material which of the lines may be used for each purpose; but, in general, I think it will be found that the lower line is best adapted to the accommodation-train and the upper for the express.

In a patent granted me, dated the 21st of

February, 1865, for an improvement in railroads, I use substantially the same materials—that is, the corrugated metallic beam—that I do in this invention. But in that patent I use a square block of stone, metal, wood, or other material, in which to insert and by which I support the lower end of the column. When the superstructure or cross-tie rests, as shown in that patent, directly upon the upper end of a straight upright column, this kind of foundation, though not the best, will answer; but when, as in my present improvement, the vertical column of support is curved over, so as to make its upper extremity become the horizontal cross-tie, it is evident, upon well-known mechanical principles, that a mere square block would not receive the line of pressure in a proper direction to give that rigidity and steadiness of support to the mass above which the circumstances of the case require. To obviate this objection to the square block, and as near as possible give the requisite support to the parts above, I make the block, which is represented in the figures by the letter A, in the form of a parallelopipedon entire, or with its upper surface beveled, as shown in the figure. The base of the column being secured in this near one end of this block, the other stretches inward to a greater or less extent.

B is a section of the street or roadway, and shows how and about where the blocks should be buried. Ordinarily I prefer to place them so that the column C will be about a foot inside the curb-stone; but they may be varied to suit the judgment of the builder.

The column C is constructed in the same manner as described in my patent referred to, dated February 21, 1865, for improvement in railroads; but instead of being straight and vertical, as described and shown in that patent, it is gradually curved or bent over until it blends with, or, more properly speaking, becomes the horizontal part C' or cross-tie. The mode of making this curve or bilge is fully set forth in my patent for improvement in apparatus for bending corrugated plates of metal, dated 3d day of June, 1862. On the horizontal portion or cross-tie C' the rails for the cars are laid, as seen at D D.

It is, of course, understood that the columns C C stand directly opposite each other, one on

each side of the street or roadway B. When the street or roadway is not too wide the horizontal portions or cross-ties C' C' may be extended until they meet, as shown in Fig. 1, Plate I, and their ends firmly secured together, as shown and described in my patent for improvement in railroads heretofore referred to, or by inserting a small section of corrugated beam into the grooves of the approximated ends of C' C' and securing them by bolts, as seen at Fig. 3, Plate I, or otherwise.

When the street or roadway is too wide, or for any other reason it may not be desirable to have a continuous line across it, these two ends of the horizontal part or cross-tie may not be brought into apposition, but so far removed from each other as to leave an open space between them; and if, at any subsequent period, it should be desirable to have a continuous connection between them—as, for instance, in making additional tracks—then this can be done by simply introducing a section of the beam of the required length to cover this space.

In Figs. 1 and 2, Plate II, I have shown a double-curved form for the cross-tie portion, and this form may be used instead of that represented in Fig. 1, Plate I; or it may be the form given to an interposed piece between C' C' when these two are not in the first instance brought into apposition. From actual experiment I have found that when a beam is thus curved it resists vertical pressure to a much greater extent than when it remains in a perfectly horizontal line throughout.

In my patent, heretofore referred to, for improvement in railroads I have shown a drawing and described a structure (Fig. 5 of that patent) to be erected on a single series of columns on each side of the street. In that case the cross-ties have no connection with each other across the street or roadway, and are supported directly upon the vertical column, with arms extending from the vertical column at an angle therewith to or near the outer end of the cross-ties.

Following out the idea of the construction as set forth in describing Fig. 1 of Plate I in this specification, I propose to modify this structure as seen and represented in Fig. 3 of Plate II. In this case I curve the upper end of the column, as I have described in explain-

ing the organization of Fig. 1, Plate I, supporting it, if necessary, by an arm, as shown in the drawings, and on this apply another piece of the corrugated beam, which serves not only the purpose of a cross-tie for the support of the rails, but, by extension in the other direction, gives support to a platform over the walk or pavement.

In Fig. 4, Plate II, I show a further modification of the aforesaid Fig. 5 in my patent for improvement in railroads, by placing the rail-track entirely on one side of the line of the vertical column, giving the other side thereof entirely for the footway, and supporting the whole upon the elongated base-block A, as shown in the preceding drawings.

After what has been said and shown in the drawings, the construction and arrangement of the parts composing the upper track (shown on Figs. 1 and 2 of Plate I) can be readily appreciated. A portion of corrugated beam, after having been properly secured at its lower extremity to the column C, rises vertically to the height required to give free passage to the cars on the lower track, then curves over, as in the arrangement below, and forms the cross-tie or horizontal piece for the reception of the rails, and is united to its opposite fellow cross-tie or not, as the case may be, precisely as was described in giving the arrangement for the lower track.

Having thus fully described my invention, what I claim therein, and desire to secure by Letters Patent of the United States, is the following:

1. The construction of an aerial railroad with two tracks, one above the other, substantially as described.
2. The construction of the horizontal portion or cross-ties of an aerial railroad in the form of a double curve, substantially as shown in Fig. 2, Plate II, and in the manner herein described.
3. The construction of an aerial road upon a single column, substantially as shown in Fig. 3, Plate II, and in the manner herein described.

RICHARD MONTGOMERY.

Witnesses:

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