

(No Model.)

2 Sheets—Sheet 1.

E. M. BOYNTON.
ELEVATED RAILWAY SYSTEM.

No. 413,610.

Patented Oct. 22, 1889.

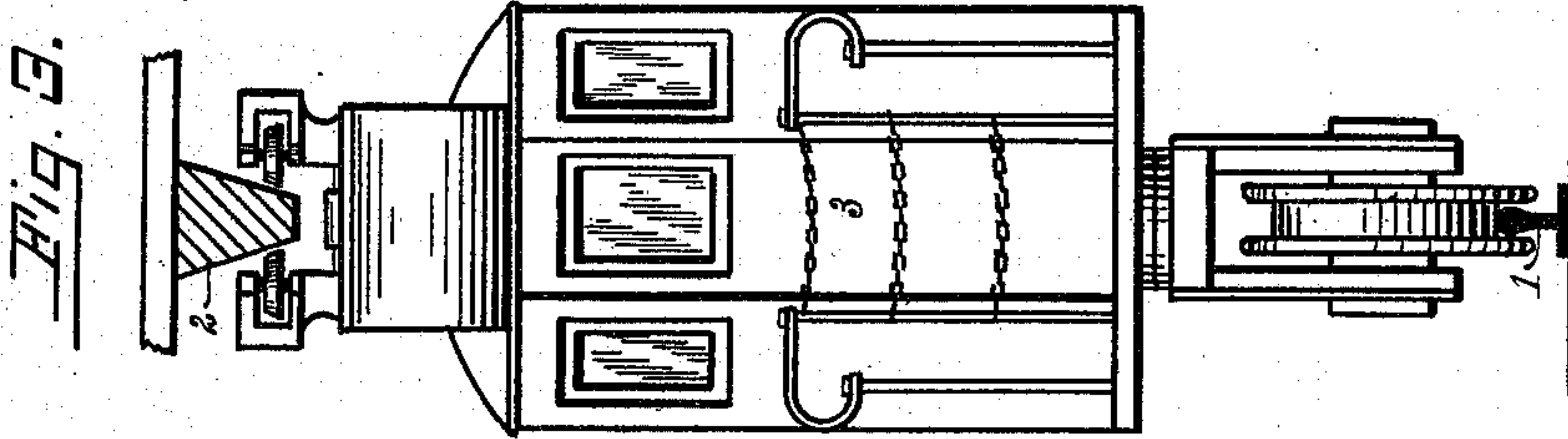
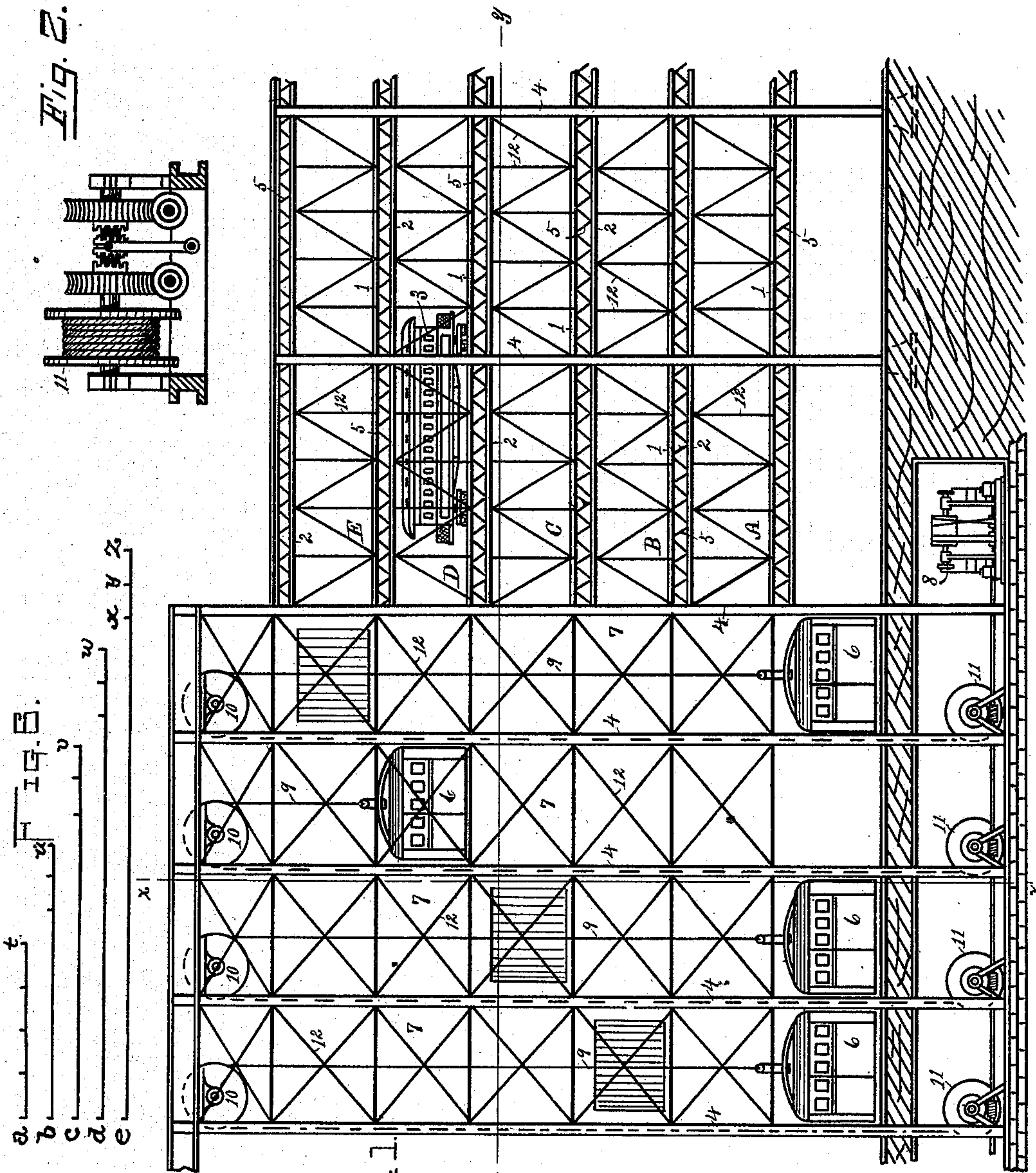
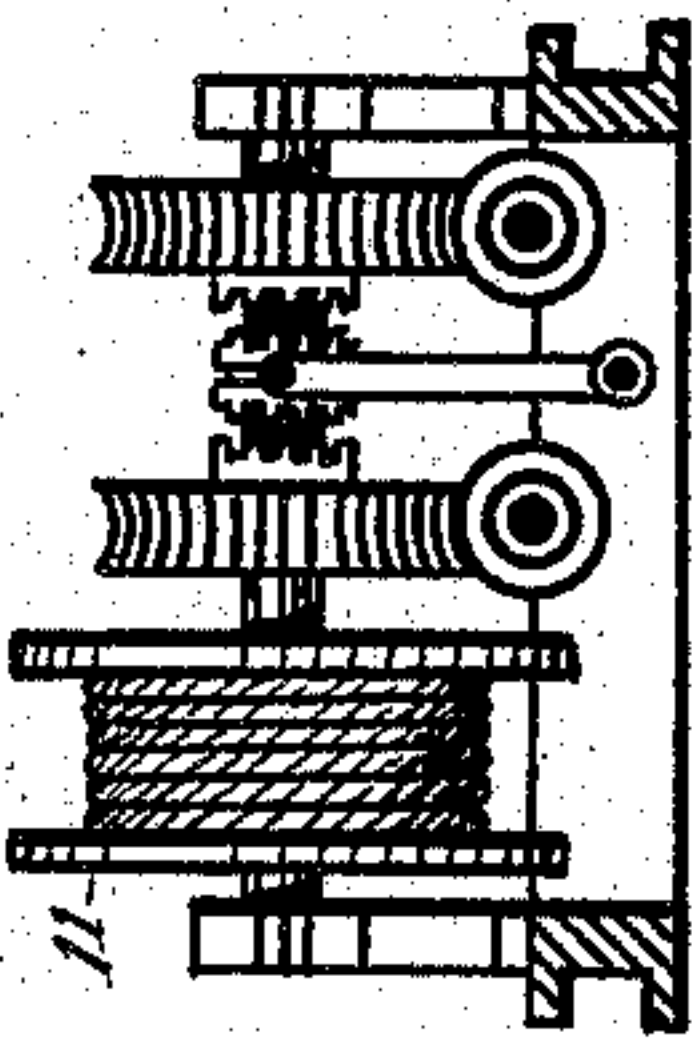


Fig. C.



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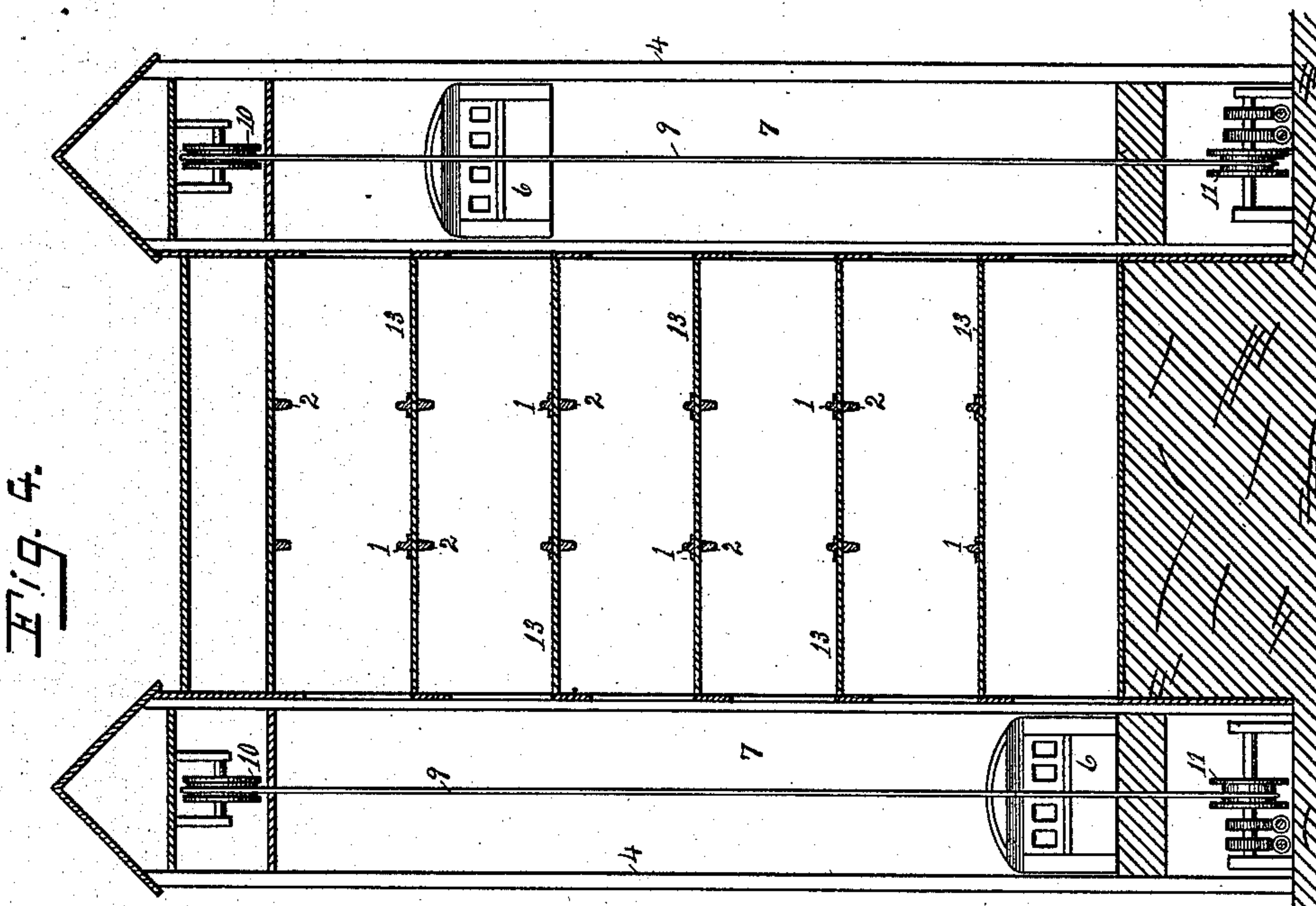
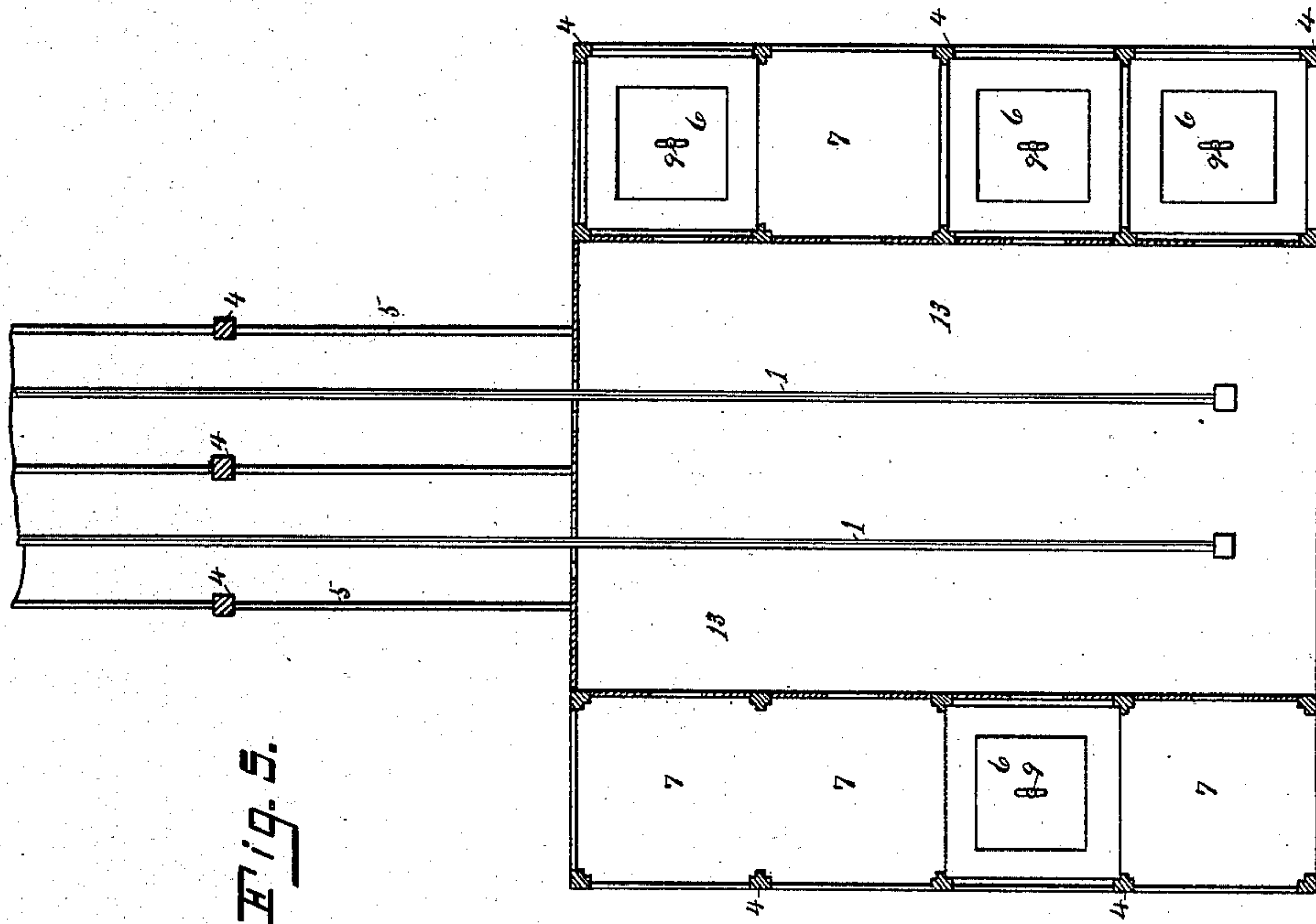
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WITNESSES
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UNITED STATES PATENT OFFICE.

EBEN MOODY BOYNTON, OF WEST NEWBURY, MASSACHUSETTS.

ELEVATED-RAILWAY SYSTEM.

SPECIFICATION forming part of Letters Patent No. 413,610, dated October 22, 1889.

Application filed November 21, 1888. Serial No. 291,462. (No model.)

To all whom it may concern:

Be it known that I, EBEN MOODY BOYNTON, a citizen of the United States, residing at West Newbury, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Elevated-Railway Systems; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to produce a novel elevated-railway system consisting of different levels, each of which is adapted for the running of through trains in opposite directions to points at different distances from the starting-point, the various levels being reached from the street either by elevators, as shown in the drawings, or by stairs. In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation, partly in section, illustrating my novel system at a starting-station; Fig. 2, an enlarged detail view of a suitable hoisting mechanism, although the special hoisting mechanism used is not an essential feature of my invention; Fig. 3, an end elevation of one of the cars preferably used with my novel system; Fig. 4, a vertical transverse section showing the different levels and the way they are reached by elevators; and Fig. 5 is a horizontal section, looking down. Fig. 6 is a diagram illustrating the arrangement of the lines under my improved system.

Similar numbers denote the same parts in all the figures.

This system may of course be applied to ordinary railways, although it is especially designed to be used in connection with the system known as the "Boynton Bicycle Railway System," in which the rolling-stock runs upon a single series of wheels placed tandem, and traveling upon a supporting-rail, and is supported by guide-wheels engaging a suitable guide overhead.

1 denotes the supporting-rail, 2 the guides, and 3 the cars, all of which are fully protected in my patents and pending applications, and form no portion of my present invention. The various levels I have designated by A, B, C, D, and E.

It will of course be understood that my

invention is not limited to any special number of levels or to the arrangement and number of tracks upon a level. In practice there should be about ten feet space between each level and about twenty feet between the lowest level (designated by A) and the street. In the drawings I have shown five levels, although in practice seven levels would not be higher than an average block and many feet lower than the highest blocks of buildings. Should quadruple instead of double tracks be required, they might of course be placed side by side or upon opposite sides of the street and braced together.

My invention will be more clearly understood by supposing the drawings to illustrate a station at the Battery or at City Hall, New York. Each level would be given up entirely to through trains running in opposite directions to and from a certain terminus. For instance, suppose Twenty-third street to be the terminus of one level; the trains running upon another level going through to Forty-second street and back; another level being entirely given up to through trains running to Sixtieth, Eightieth, One hundredth, or any other street; another level running, say, to One hundred and fortieth street; another being occupied by trains for the Hudson River road and New York Central system; another by trains for New York and New Haven road and New England system, and in the opposite direction trains to various stations in Brooklyn and the Long Island system and for the Pennsylvania, Erie, West Shore, and other systems. Such arrangement is illustrated by the diagram Fig. 6, in which the different lines *a*, *b*, *c*, *d*, and *e* terminate successively at *t*, *u*, *v*, *w*, and *z*. It will thus be seen that the train on line *e*, for instance, need not stop at all until station *z* is reached, while, on the other hand, the local traffic along the whole system is efficiently served.

4 denotes the pillars, which are embedded in the ground and supported in such a manner as to render settling impossible. These pillars are securely braced together by truss-work 5, of any suitable or preferred construction.

6 denotes elevators running in wells 7.

8 denotes a suitable hoisting-engine, 9 a

hoisting rope or ropes running over pulleys 10, and 11 the winding-drums. It should be understood that these various details of construction are not of the essence of my invention.

In Fig. 2 I have illustrated in detail one of the many ways in which the winding-drums may be operated.

As the worms, worm-wheels, &c., form no portion of my invention, I have not deemed it necessary to give a detailed description thereof.

In practice the truss-work is made entirely of steel, the different levels being connected together by braces 12, so that each level is able to sustain any possible amount of side strain. The entire structure is practically an open block of slender latticed steel, light in weight and relatively inexpensive, open to the light and of immense strength, the degree of strength being as the square of the depth of the chord.

The operation of the system is as follows: Passengers enter the elevators from the street and are carried to the level of the train they desire to take, being landed on platforms 13, which extend at the sides and rear of the tracks and between them. The special objects of the system are convenience to passengers, rapidity of travel, the avoidance of changing cars, and the ability to handle large numbers of passengers in a short space of time.

As already stated, the system will be found especially adapted to the Boynton Bicycle Railway System, and it may be added that it is equally adapted to electric systems of transportation.

Having thus described my invention, I claim—

1. In a railway system, a series of tracks at different levels, one above the other, said levels terminating at points successively nearer to the beginning, each level being adapted for the passage of through trains in both directions and provided beyond the end of the next shorter level with stations and passenger-platforms, in combination with series of elevators placed at suitable distances apart and leading to all the levels, and platforms at each level, affording convenient access to the cars.

2. In a railway system, a double series of horizontal passenger conveyances and guides or tracks therefor arranged vertically, one above the other, each pair of tracks upon the same level being adapted for the passage of conveyances in both directions at the same time, and said tracks terminating at different points or stations, combined with a corresponding series of vertical guides or ways and passenger conveyances therefor, adapted to run from a common level each to one of said horizontal conveyances, and actuating mechanism for said vertical conveyances, substantially as set forth.

3. In a railway system, a double series of horizontal passenger conveyances and guides or tracks therefor arranged vertically, one above the other, each track consisting of a single bottom rail and a top support, each pair of tracks upon the same level being adapted for the passage of conveyances in both directions at the same time, and said tracks terminating at different points or stations, combined with a corresponding series of vertical guides or ways and passenger conveyances therefor adapted to run from a common level each to one of said horizontal conveyances, and actuating mechanism for said vertical conveyances, substantially as set forth.

4. In a railway system, a double series of tracks arranged vertically, one above the other, and terminating at points successively nearer to the beginning, the lower track being the longer, and station-platforms for each track beyond the terminus of the next higher track, substantially as set forth.

5. In a railway system, a double series of tracks arranged vertically, one above the other, each track consisting of a single bottom rail and a top support terminating at points successively nearer to the beginning, the lower track being the longer, and station-platforms for each track beyond the terminus of the next higher track, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

EBEN MOODY BOYNTON.

Witnesses:

WILLIAM H. MOODY,
ALBERT L. BARTLETT.