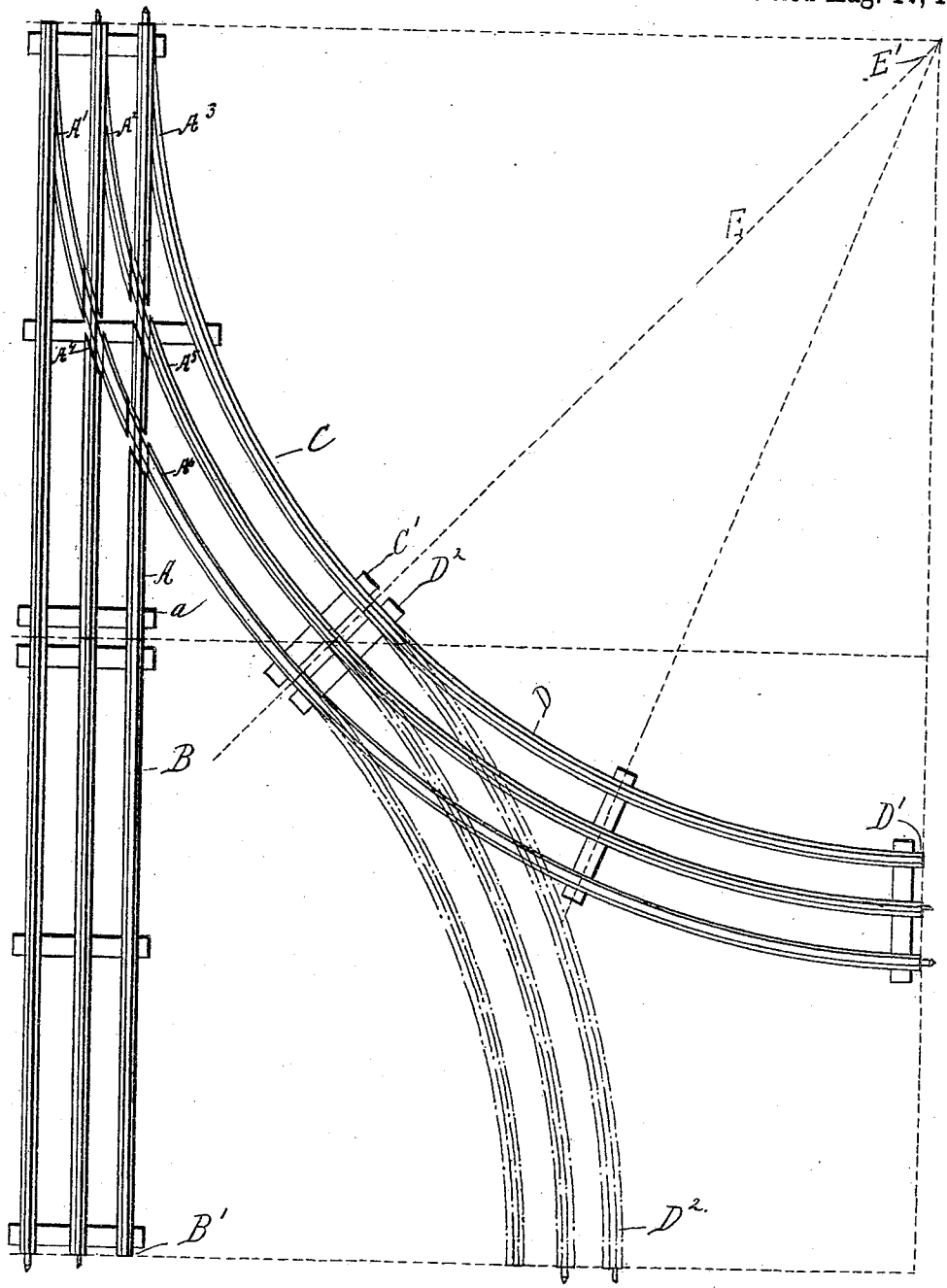
H. C. GRANT.

RAILROAD CONSTRUCTION.

APPLICATION FILED JUNE 6, 1908.

931,418. Patented Aug. 17, 1909.



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UNITED STATES PATENT OFFICE.

HARRY C. GRANT, OF BAYONNE, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE LIONELL MANUFACTURING COMPANY, A CORPORATION OF CONNECTICUT.

RAILROAD CONSTRUCTION.

No. 931,418. Specification of Letters Patent. Patented Aug. 17, 1909.

Application filed June 6, 1908. Serial No. 437,119.

To all whom it may concern:

Be it known that I, HARRY C. GRANT, a citizen of the United States, and resident of Bayonne, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Railroad Construction, of which the following is a specification.

My invention in railroads relates to certain improvements in the track construction, and has particular reference to the proportioning of the lengths of the sections of track whereby the curved sections which are employed for curves, turnouts and switches are adapted to unite with the straight sections in providing a terminal alinement of the straight section joints and the curved section joints. Hitherto and previous to my invention it has been the practice to construct tracks of this character without regard to this feature and in this connection it was customary to construct the curved sections of random lengths with regard to the straight sections, and in order to provide the alinement at the terminals of the straight and curved sections when the track was being built, it was necessary to select sections which would fit when united so as to finally bring the terminals together, thereby rendering the construction of the track somewhat difficult and at the same time it introduced troublesome features in the manufacture.

It is the object of my invention to circumvent these difficulties by providing a simple and inexpensive manner of proportioning the track, whereby the same may be assembled in a minimum period of time, while at the same time I provide a plurality of sections of track which, with the exception of those having switches, are respectively duplicates throughout the structure, and the lengths of these respective sections are the same whereby the construction of my improved track system may be effected in a more simple and inexpensive manner than those in vogue and previous to my invention in so far as I am at present aware.

The different features characteristic of my invention are depicted in the drawing hereto attached which forms a part of this specification and are referred to in detail by the descriptive matter relative thereto, and finally in the claims concluding the specification.

In the drawing hereto attached, I have illustrated in plan the construction of my improved railway, showing in dotted lines the position of the curved section when transformed from a circular track to a shunt or turnout, wherein—

A illustrates a section of track arranged for a third rail toy electrical railroad, and is provided with a series of switch rails A′, A^2, A^3, A^4, A^5 and A^6, and B, a section of similar length eliminating the switches aforesaid, and C, a curved section adapted to unite with A in the formation of a switch. The section C also contains switching provision in common with the section A, and D illustrates a curved section of equal length to that of the section C. It will be observed by the dotted position of the section D that the route of the track has been altered so as to substantially form with the section B a way for a double line of track. In order to accomplish this, the terminals D′ of the section D are brought into union with the section C in lieu of the terminals D^2 of the curved track D, which is illustrated in the full lines of the drawing. This will bring the terminals D^2 of the curved section D into perpendicular alinement with the terminal B′ of the section B.

To so proportion the lengths of the curved sections C or D, which are identical to the straight sections, whereby their terminals, C′ of the curved section C and *a* of the straight section A, will be in perpendicular alinement, I construct these relative sections of a length which bear such ratio to each other as in the example illustrated that a perpendicular erected from a center line between the straight track will intersect a radii E from a point E′ which is situated in a perpendicular erected from the opposite terminal of the straight section A, and the section C is therefore an arc of a circle of which E is the radii. It will be understood that the arc described by D is likewise a segment of the same circle and that the two sections of track C and D may be divided into a number of shorter sections, but it is necessary that they should be of equal lengths, and in order that a plurality of these sections when united would bring the final terminal of the last section into alinement with the straight section, they should be of such lengths as will bear a ratio to the straight sections as does the curved section C or D bear to the straight section A or B.

It is obvious that by so proportioning the curved and straight sections aforesaid, a

variety of curved formations may be given to the route over which the track is laid, the curved sections being formed as a continuous circle, if desired, a series of loops or a figure 8 construction, or the like, while the terminals of the straight section may be brought into such alinement at any time with any curved section terminal as to present a common base for the addition of extensions.

In the illustration, I have shown at the terminals of the curved sections C or D, the usual manner of uniting the different sections by slip joints, but have not referred to these, as they form no part of my present invention.

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

1. In a railroad, the combination in a track of a plurality of rectilinear and curved sections of proportionate lengths, whereby the curved sections and rectilinear sections when united will aline in a common base at a right angle to said rectilinear sections.

2. In a track construction of the character described, the combination of straight sections and curved sections, the curved sections and the straight sections having a common union at one terminal and diverging at the opposite terminals, the two sections being of proportionate lengths whereby the divergent terminals are brought to a common alinement at a right angle to said straight sections.

3. A track construction of the character described comprising two straight sections and two curved sections, each curved section being of such proportionate length to the straight section that when joined end to end the ends of a straight section and a curved section will be in alinement at a right angle to said straight section, substantially as set forth.

4. In a track structure of the character described, a plurality of straight and curved units, said units being adapted to mutually engage each other at their terminals and the same being of proportionate lengths, whereby when the units are coupled in the formation of a track the terminals of the curved sections and the terminals of the straight sections are adapted to lie in the same base line and at a right angle to said straight section.

5. In a track construction of the character described, a plurality of straight sections of given length and a plurality of curved sections formed in the arc of a circle, each straight section being of proportionate length to each of said curved sections, the proportion being such that when two of said curved sections are joined end to end to form a compound curve and in parallel arrangement with two of said straight sections similarly joined, the ends of said straight sections and the ends of said curved sections will be in alinement at a right angle to said straight sections, substantially as set forth.

Signed at New York in the county of New York and State of New York this 4th day of June A. D. 1908.

HARRY C. GRANT.

Witnesses:
FRANK M. ASHLEY,
A. T. SCHARPS.

Correction in Letters Patent No. 931,418.

It is hereby certified that the name of the assignee in Letters Patent No. 931,418, granted August 17, 1909, upon the application of Harry C. Grant, of Bayonne, New Jersey, for an improvement in "Railroad Construction," was erroneously written and printed "The Lionell Manufacturing Company," whereas it should have been written and printed *The Lionel Manufacturing Company;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 25th day of October, A. D., 1910.

[SEAL.]

E. B. MOORE,

Commissioner of Patents.