(No Model.) 2 Sheets—Sheet 1.

W. C. WOOD.

STREET RAILWAY CROSSING.

No. 512,351. Patented Jan. 9, 1894.

Fig. 1.

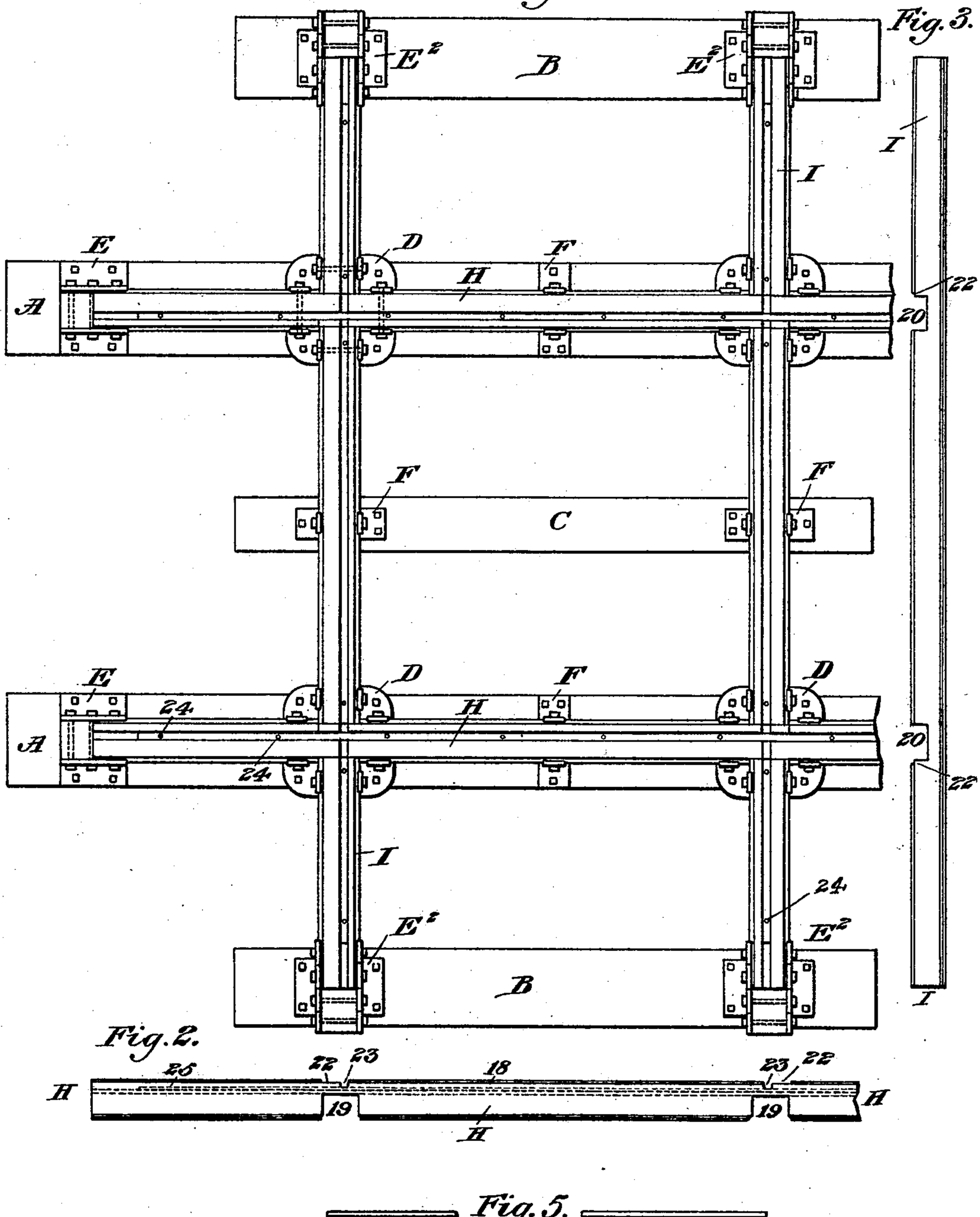


Fig. 3.

Fig. 2.

Fig. 4.

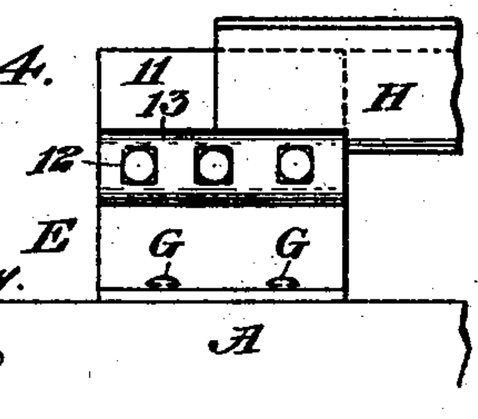
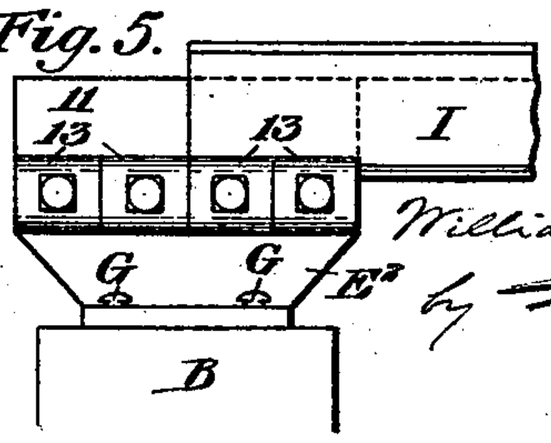


Fig. 5.



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(No Model.) 2 Sheets—Sheet 2.

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STREET RAILWAY CROSSING.

No. 512,351. Patented Jan. 9, 1894.

Fig. 6.

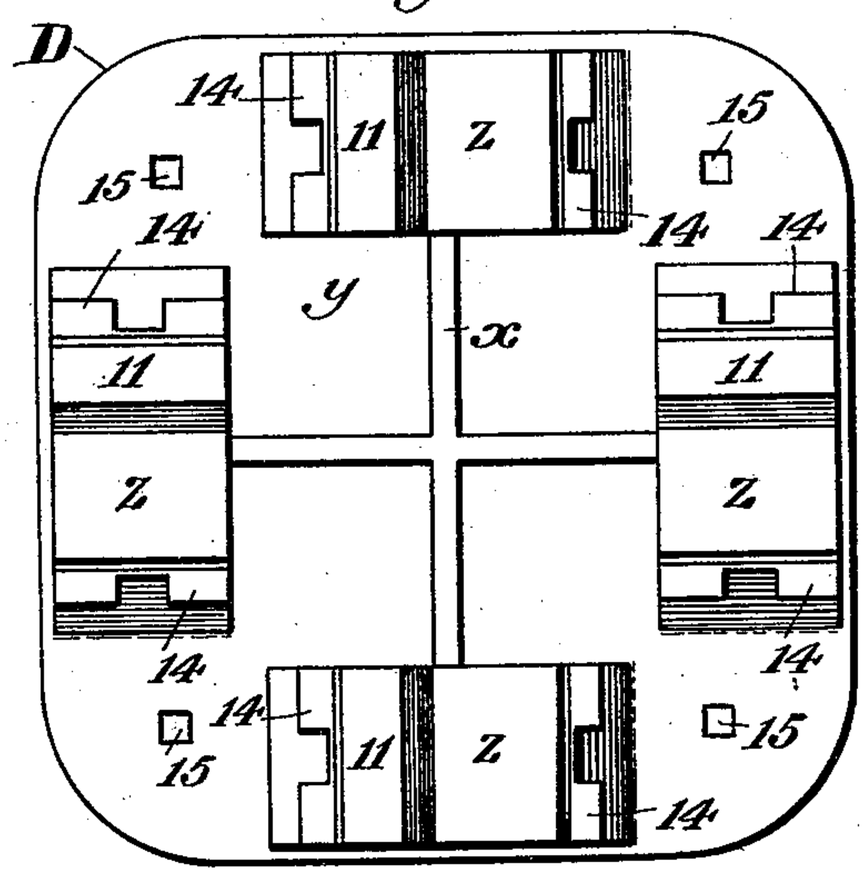


Fig. 7.

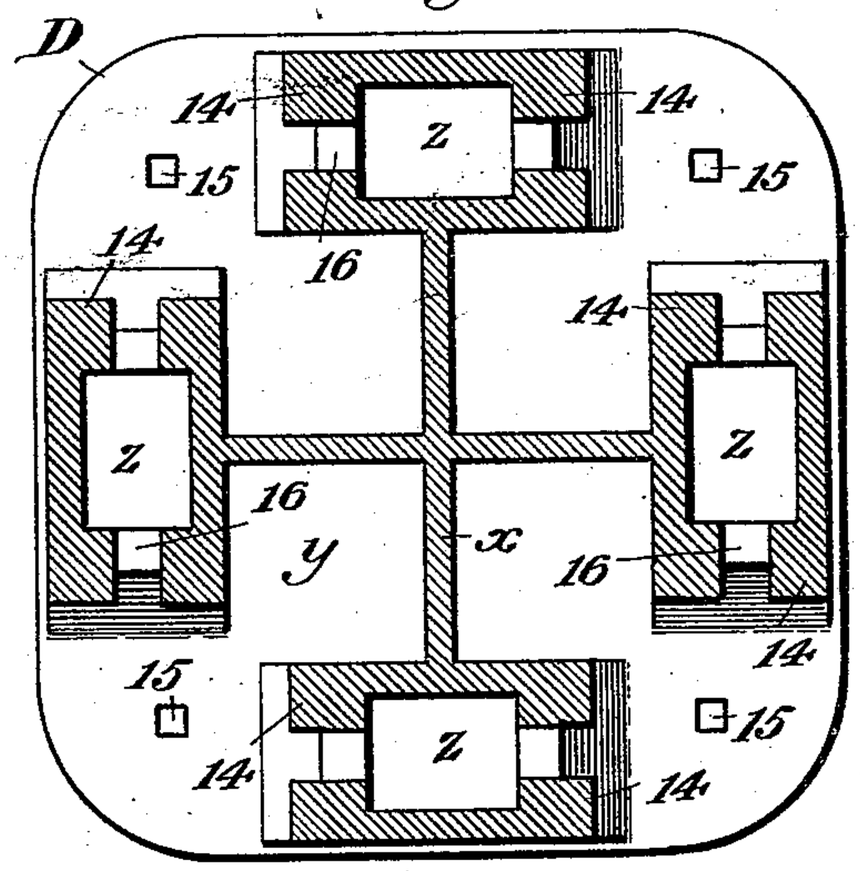
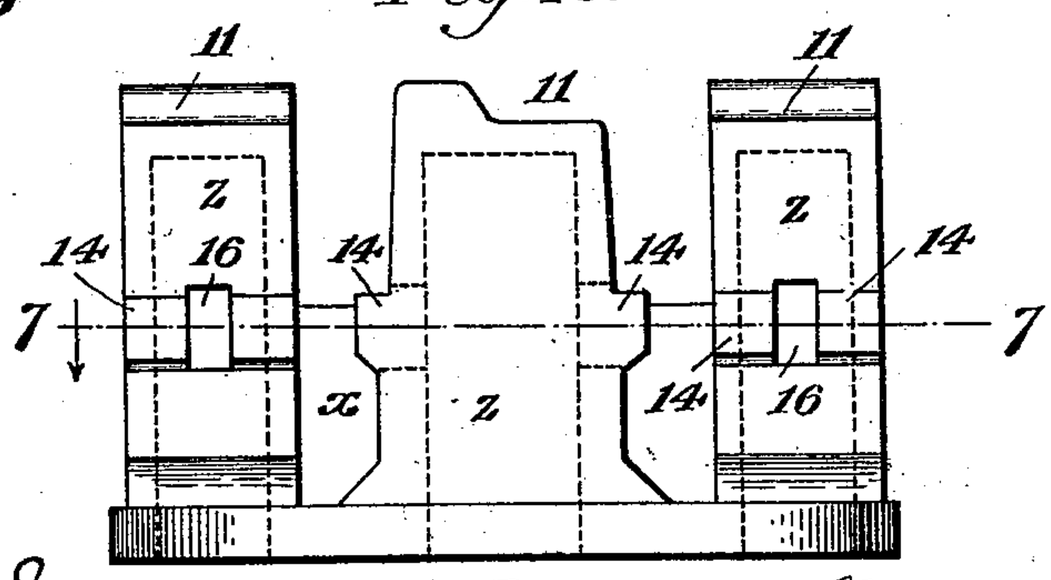


Fig. 8.

Fig. 9.

Fig. 10.



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UNITED STATES PATENT OFFICE.

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STREET-RAILWAY CROSSING.

SPECIFICATION forming part of Letters Patent No. 512,351, dated January 9, 1894.

Application filed March 31, 1893. Serial No. 468,446. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CLARK WOOD, a citizen of the United States of America, and a resident of Brooklyn, in the State of New York, have invented a new and useful Improvement in Street-Railway Crossings, of which the following is a specification.

This invention relates to crossings composed at top of pieces of rail, and consists in certain peculiar "intersection-chairs" so to speak, and certain novel combinations of parts, as hereinafter set forth and claimed.

The leading objects of the invention are to solidly support the rails on all sides of each intersection; and to provide for handling and shipping the crossing in parts, for making the top of the crossing wholly or in part of box girder-rails, and for making both of two lines of box rails continuous, and mutually supported against tilting or lateral displacement.

Two sheets of drawings accompany this specification as part thereof.

Figure 1 of these drawings is a plan view of a box-rail crossing illustrating the present invention as a whole. Fig. 2 is an elevation of one of its top rails, projected from Fig. 1. Fig. 3 is an elevation of one of the under rails, projected from Fig. 1. Figs. 4 and 5 are fragmentary elevations showing joint-chairs of the two styles represented in Fig. 1. Fig. 6 is a top view of one of the intersection-chairs. Fig. 7 is a sectional plan view of the same. Fig. 8 is a fragmentary sectional elevation of an intersection of the crossing showing the respective box-rails in cross-section and in elevation, and the chair clamping-bolts and clamps in elevation. Fig. 9 represents a vertical section on the line 9—9 Fig. 8; and Fig. 10 is an elevation of the intersection-chair, showing by the line 7—7 the plane of Fig. 7.

The figures on Sheet 2 are enlarged three diameters from those on Sheet 1; and like reference letters and numbers indicate corresponding parts in all the figures.

The specific embodiment of the invention as a whole represented by the drawings will first be particularly described, and the features which are considered new and original will be pointed out in the claims.

Said box-rail crossing is conveniently supported by two extra-wide timbers A, crossing one track and extending beyond the extremities of the superposed rails, a pair of ordinary joint cross-ties B at the ends of the other crossing-rails, and an intermediate cross-tie C between the main timbers A. For the several intersections, two special chairs D rest on each of the main timbers A, together with a pair of joint-chairs E and an intermediate single-chair F; a pair of compromise joint-chairs E^2 rest on each of said cross-ties B; and a pair of single-chairs rest on said intermediate cross-tie C. All the chairs are preferably spiked down by means of my improved spike patented February 24, 1891, (Patent No. 447,268,) which is represented at G in Figs. 4 and 5; all the intermediate chairs F represented in Fig. 1 are steel chairs being substantially of the construction represented by Figs. 1 and 2 of my drawings forming part of Patent No. 459,717, dated September 15, 1891; and the joint chairs E are substantially of the same construction as said intermediate chairs; said joint chairs E and the compromise joint chairs E^2 being respectively of the shapes in side elevation represented by Figs. 4 and 5. Each of these several chairs has a seat portion 11, Figs. 4 and 5, which is straddled by the superposed box-rail, one or more clamping bolts 12, extending horizontally through all, below the rail-seat, and two or more clamps, 13, which embrace laterally-projecting flanges on the rail and beveled projections below said flanges on the sides of the chairs, according to the clamping system set forth in my specification forming part of Patent No. 450,594, dated April 14, 1891. The compromise joint-chairs E^2, Fig. 5, have chair castings fitted at their outer ends to a different section of rail and are provided with several clamps on each side, a pair to each bolt, so that the several bolts may be tightened individually without affecting the clamps at other points.

The "intersection-chairs" D, shown in detail on Sheet 2 of the drawings, are provided with seat-portions 11, through clamping-bolts 12, and clamps 13, according to the same system; said seat-portions, or "seats" as they are hereinafter termed, and the beveled lateral projections 14 below them, being formed on chair uprights *z*, of which there are four to each chair, arranged as shown in Figs. 6 and

7, with a base *y*, common to all, provided with spike-holes 15. The several chair-uprights are further connected with the said base and are connected with each other by a cruciform brace *x*, integral with the top of the base *y*, as in Fig. 9, and integral with the inner sides of the several chair-uprights *z*, as in Fig. 7.

To lighten the chair, each of the chair-uprights *z* is conveniently cast hollow, as in Figs. 7 and 9, and at the same time provided with two bolt-holes 16, in the form of rectangular openings, elongated vertically.

Four continuous pieces of box-rail II, I, having grooves adjoining their treads 17, Figs. 8 and 9, and provided in said specific embodiment of the invention with "filling-up pieces" 18, of bar steel, hereinafter termed filling strips, in their grooves at and beyond the intersections, complete the improved crossing. The rail-pieces H and I are of the two patterns represented respectively by Figs. 2 and 3 as to elevation, and in cross-section, Fig. 8, are in common of the pattern known as section C represented by Fig. 1 of my drawings forming part of Patent No. 443,470, dated December 23, 1890.

To preserve the continuity of all the rails at the intersections, the top-rails H are notched at bottom to the under side of the top of the rail at each intersection, as shown at 19 in Figs. 2, 8 and 9, and the under rails I are notched at top to the under side of the top of the rail at each intersection, as shown at 20 in Figs. 3 and 9. Said notches at 19 and 20 are formed by the entire removal from the rail of the metal originally within the limits of each notch, and, being substantially rectangular as seen in Figs. 2 and 3, are easy to cut and fit. Not only so, the top rails, which customarily form part of the main track, and are thus subjected to the greatest strains, have a direct support beneath at both sides of the top of the rail as in Fig. 9, and all the rails are effectively supported by each other against lateral displacement or tilting. Being of the peculiar construction in cross-section before referred to, which comprises a high guard 21 opposed to the tread 17 of the rail, to form its groove, both rails are further notched at top as to said guard 21 to the plane of the tread of the rail, as represented at 22 in Figs. 2 and 3 and Figs. 8 and 9, and the top rails are further notched at 23, Fig. 2, in continuation of the grooves of the under-rails. Said filling strips are fitted snugly to the rail-grooves at bottom, and are held in place by vertical rivets 24 Fig. 1. They are of sufficient depth to cause the car-wheels to run on their flanges in traveling over them, and their ends are beveled as shown in dotted lines at 25 in Fig. 2 so as to lift the wheels gradually. In this way any inequalities at the intersections are not felt in the cars, being reduced to a minimum by the abundant chair support, distributed as above, and obliterated as regards the grooves by said filling-strips 18. These filling-strips form no part of my invention hereinafter claimed, and may ordinarily be omitted in practice.

After fitting the parts together at the yard of the manufacturing shops, they may be readily and safely taken apart sufficiently to facilitate handling and transportation; all the chairs belonging to the under-rails and the joint-chairs and intermediate chairs belonging to the top rails remaining clamped to them respectively. The parts are put together to complete the crossing, and the chairs are spiked to the timbers and cross-ties, on the spot where the crossing is to be used.

Ordinary spikes may of course be substituted for the improved spikes represented at G as above described; the joint-chairs E and E^2 may be interchanged as regards the respective lines, or all may be of one and the same pattern, or either or both may be substituted by compromise chairs of the construction set forth in my specification forming part of Patent No. 461,090, dated October 13, 1891, according to the tracks leading to the crossing; other patterns of box-rail may be substituted for the particular pattern above described; one or both pairs of rails may be other than box-rails, the rail seats of the chair uprights being correspondingly modified; and other like modifications will suggest themselves to those skilled in the art.

Having thus described the said improvement, I claim as my invention and desire to patent under this specification—

1. The combination, in a street-railway crossing, of two box girder-rails, having substantially rectangular notches in their webs extending upward to the bottom of the top of the rail, and another pair of such box rails having substantially rectangular notches at top extending downward to the bottom of the top of the rail, substantially as hereinbefore specified, whereby the respective rails are supported against tilting or lateral displacement at each intersection in the manner set forth.

2. A street-railway crossing composed mainly of box girder-rails having groove-forming guards which project above the treads, and comprising two under rails notched at top to the under side of the top of the rail at each intersection, and two top rails notched correspondingly at bottom to the under side of the top of the rail and at top in continuation of the treads and grooves of said under rails, substantially as hereinbefore specified.

3. An intersection chair, for a street-railway crossing, having four chair-uprights forming rail-seats on all sides of the rail-intersection, a base common to all, and a cruciform brace uniting the chair-uprights with each other above the base, substantially as hereinbefore specified.

4. An intersection-chair, for a street-railway crossing, having four chair-uprights and a base common to all, said uprights forming chair-seats on all sides of the several rail-intersections, and provided with beveled lateral

projections and through bolts below said seats, and with rail-clamps which coact with said projections and bolts, substantially as hereinbefore specified.

5. The combination, in a street-railway crossing, of intersection chairs each having four chair-uprights forming rail-seats on all sides of the rail-intersection, a base common to all, and a cruciform brace uniting the chair-uprights with each other above the base, continuous box-rails fitted to two rail-seats of each chair, and clamping devices holding said rails down upon said chair-seats on both sides of each rail-intersection, substantially as hereinbefore specified.

6. The combination, in a street-railway crossing, of intersection chairs each having four chair-uprights and a base common to all, said chair-uprights forming rail-seats on all sides of the several rail-intersections, and provided with beveled lateral projections and through bolts below said seats, and with rail-clamps which coact with said projections and bolts, and continuous box-rails internotched between said chair-seats, and having beveled flanges engaged by said clamps, substantially as hereinbefore specified.

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