

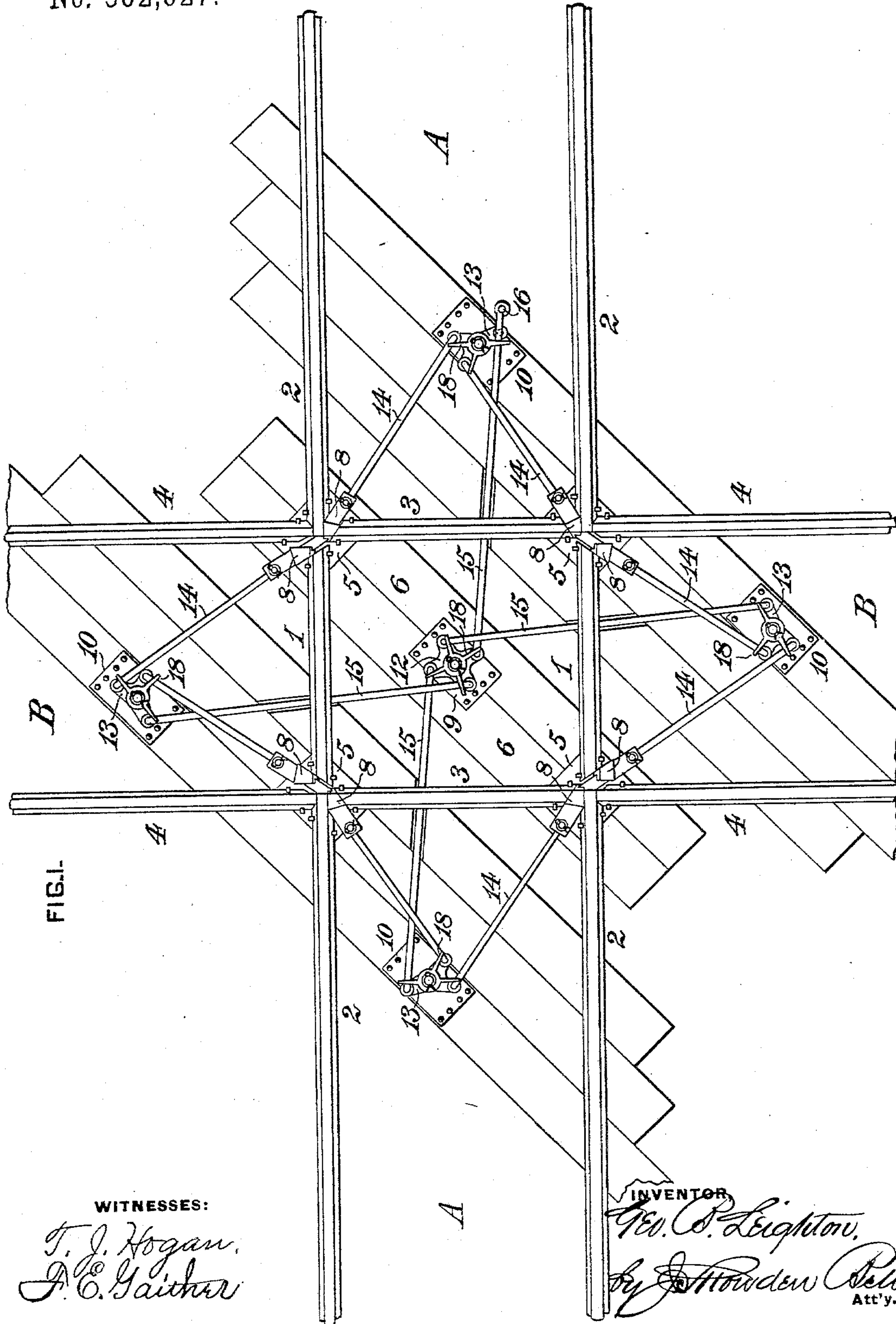
(No Model.)

3 Sheets—Sheet 1.

G. B. LEIGHTON.
RAILROAD CROSSING.

No. 562,627.

Patented June 23, 1896.



WITNESSES:

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J. C. Gaither

INVENTOR

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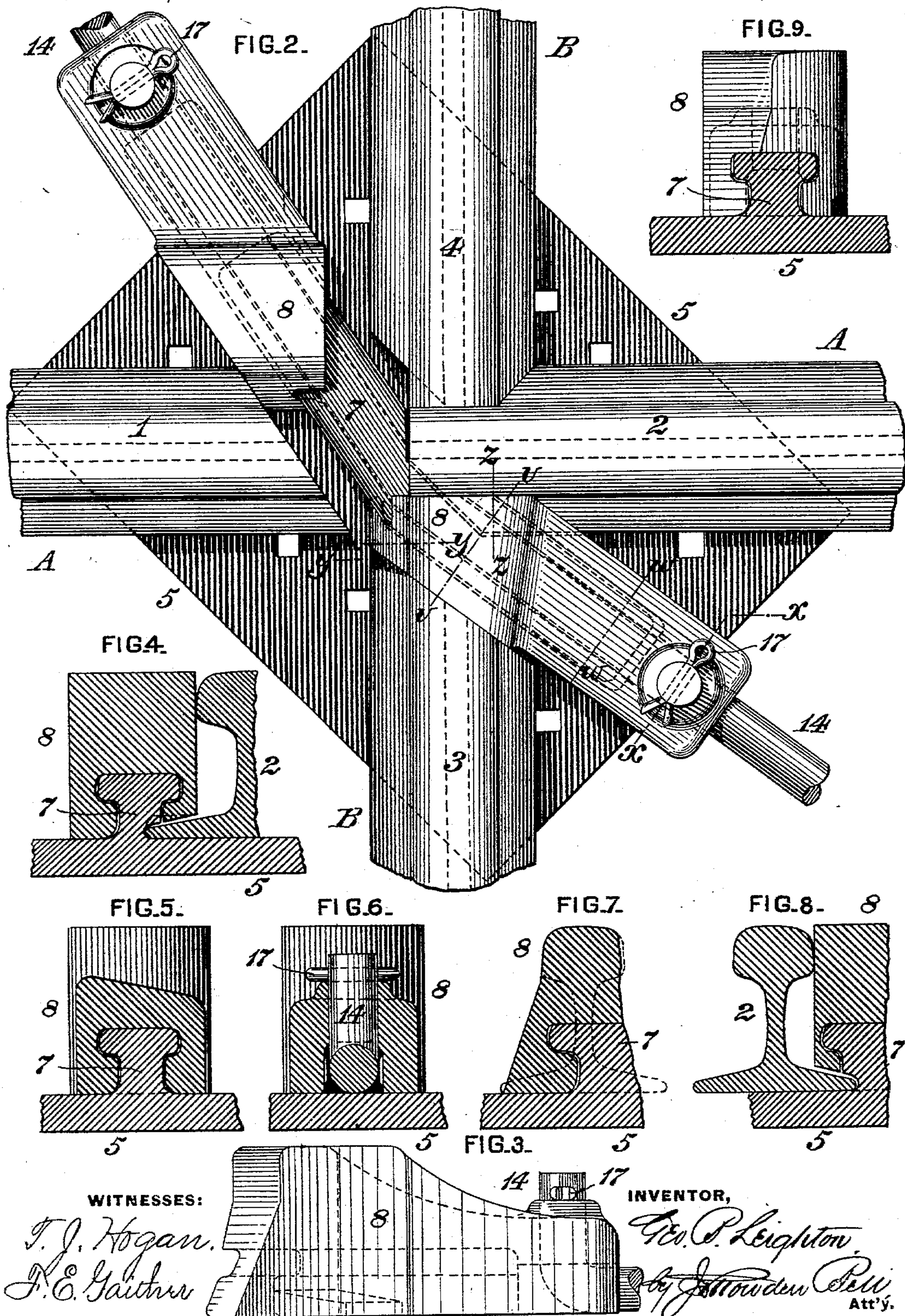
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FIG. 10.

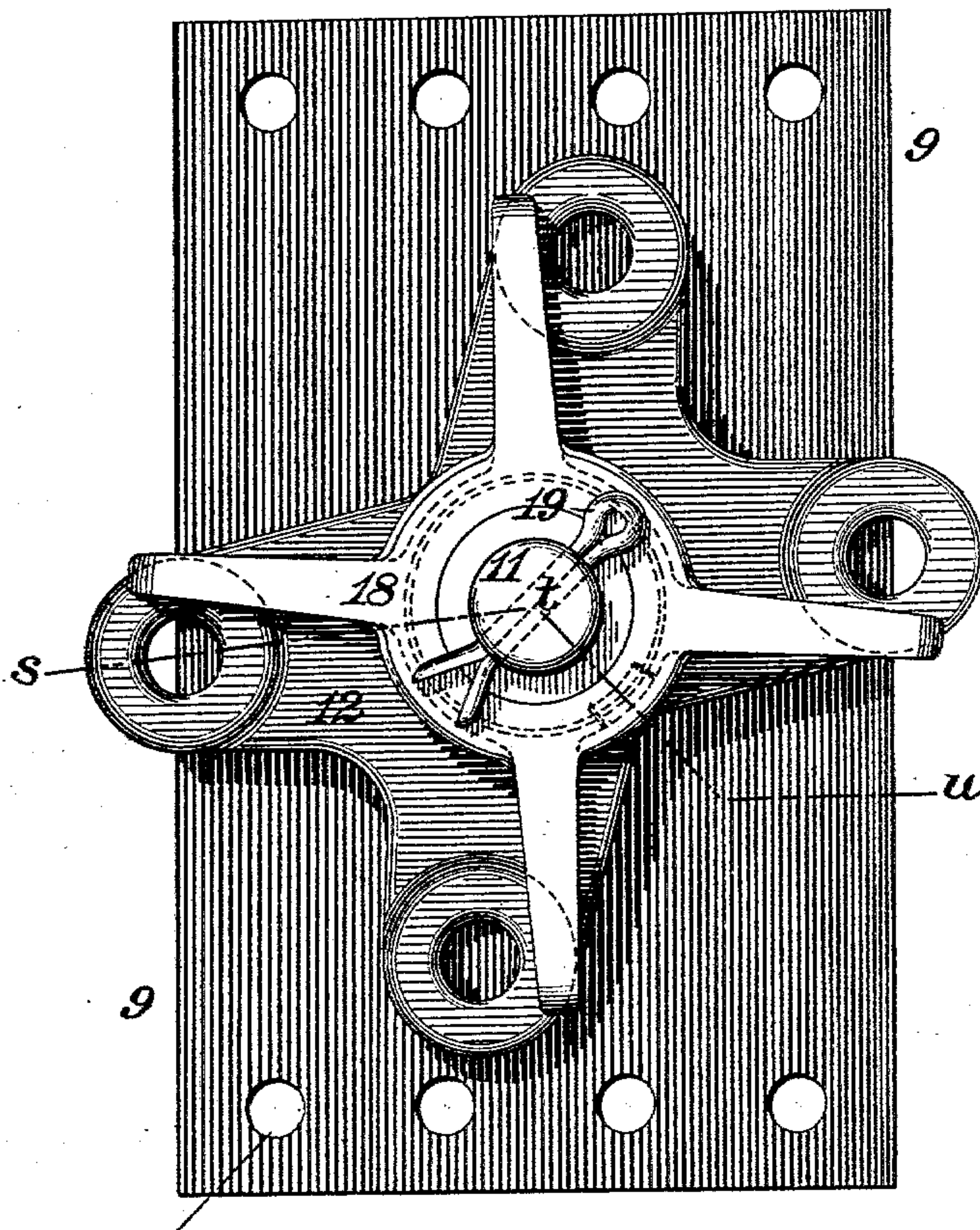
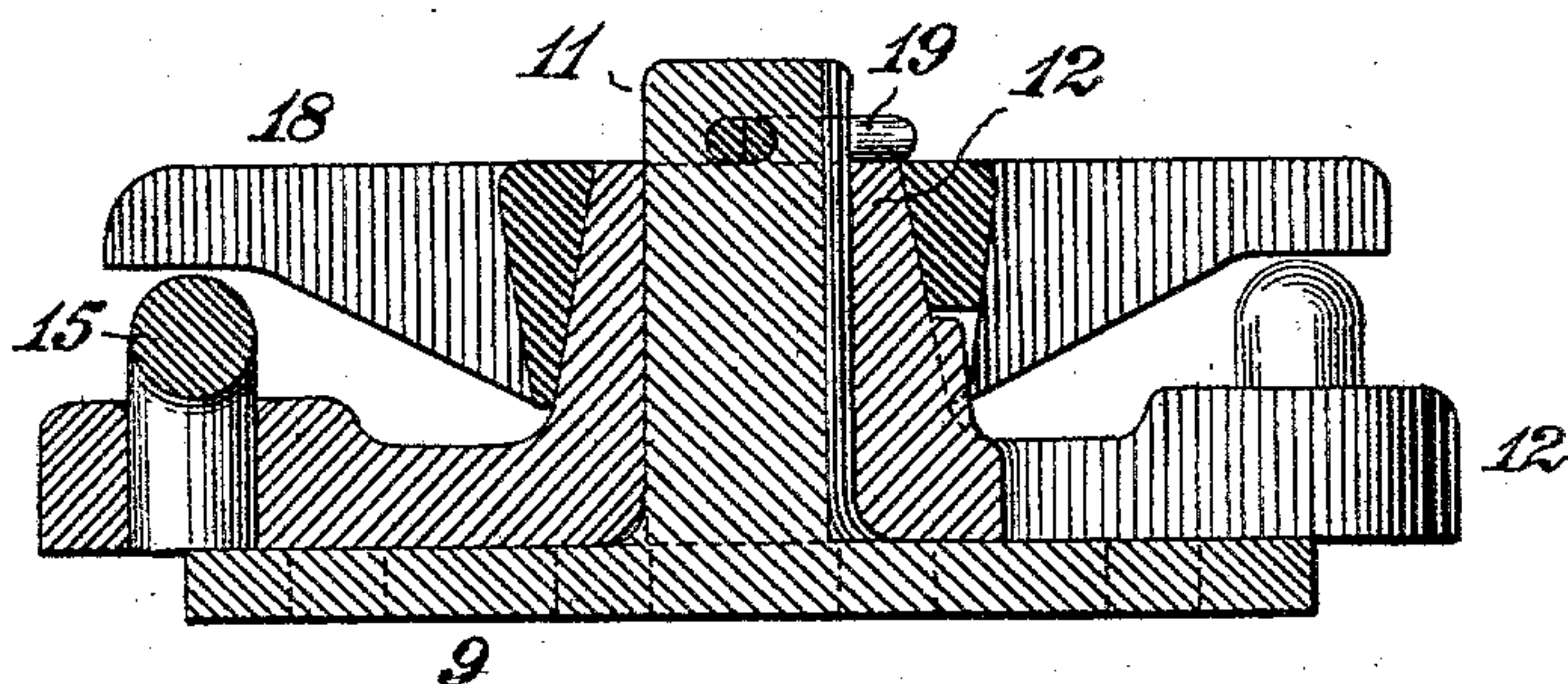


FIG. 11.



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UNITED STATES PATENT OFFICE.

GEORGE B. LEIGHTON, OF DUBLIN, NEW HAMPSHIRE.

RAILROAD-CROSSING.

SPECIFICATION forming part of Letters Patent No. 562,627, dated June 23, 1896.

Application filed February 11, 1896. Serial No. 578,852. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. LEIGHTON, of Dublin, in the county of Cheshire and State of New Hampshire, temporarily residing at the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Railroad-Crossings, of which improvement the following is a specification.

The object of my invention is to provide simple, substantial, and reliable means whereby continuous bearings may be presented for the passage of trains on either of two intersecting lines of railroad-track, as from time to time desired in the operation of either line.

To this end my invention, generally stated, consists in the combination, with two intersecting lines of track, of a guide-plate fixed below each point of intersection, two bridge-blocks fitted to traverse on guides on said plate, and operating mechanism for moving said bridge-blocks into and out of openings between rails of the intersecting lines.

My invention further consists in certain novel combinations and structural features in a railroad-crossing mechanism of the general character above specified.

The improvement claimed is hereinafter fully set forth.

Railroad-crossings as heretofore constructed have been, in many instances, unprovided with means for filling up the gaps or openings which must be made in the rails of each of the intersecting lines to permit the passage of the wheel-flanges of vehicles or trains running on the other line, and the presence of such openings occasions jars and shocks, which are injurious both to the rails and to the rolling-stock. The devices which have been most prominent in practice, prior to my invention, for obviating this objection are either of the type of movable frogs or that of rail-sections mounted on posts or pivots at each intersection, and adapted to be coincidentally rotated, so as to provide continuous rail-bearing surfaces on one line and openings on the other for the wheel-flanges. The movable frogs or switch-points referred to are adaptable only to crossings at angles of forty-five degrees or less, and rotating rail-sections involve structural complication and expense, as well as difficulty in maintaining them re-

liably against displacement or derangement under the strains of service and the effects of atmospheric conditions.

My invention is designed not only to afford a firm and rigid continuous rail-bearing for each of the intersecting lines, but also to simplify the mechanism by which it is provided, whenever required, to render the same readily applicable and accessible for renewal or repair, and to guard, as effectually as practicable, against breakage or derangement in service.

In the accompanying drawings, Figure 1 is a plan or top view of a railroad-crossing, illustrating an application of my invention; Fig. 2, a similar view, on an enlarged scale, of portions of two of the intersecting lines of rails thereof and their guide-plate and bridge-blocks; Fig. 3, a side view in elevation of the right-hand bridge-block of Fig. 2; Figs. 4, 5, 6, 7, and 8, transverse sections through the same at the lines *vv*, *ww*, *xx*, *yy*, and *zz*, respectively, of Fig. 2; Fig. 9, an end view in elevation of the left-hand bridge-block of Fig. 3; Fig. 10, a plan or top view of the central rocker-plate, rocker, and connections; and Fig. 11, a vertical transverse section through the same at the line *stuv* of Fig. 10.

My invention is herein exemplified as applied in connection with two lines of railroad-track A and B, intersecting at right angles one to the other, but it is not limited in application to crossings of that or any other specific angle, being adaptable, without variation of structural or operative principle, to crossings of angles less than that shown. Each of the intermediate or crossing rails 1 1 of the track A is cut away angularly in opposite directions at its ends, so as to leave openings between its ends and the adjacent ends of the outer or main rails 2 2 of the same track, the inclination of the ends of each intermediate rail being inward, or toward the center of the track A, from the inner to the outer side of the rail. The intermediate rails 3 of the track B are similarly cut away at their ends, so as to present similar openings between their ends and the inner sides of the adjacent end portions of the outer or main rails 2 2 of the track A, against the outer

sides of which the ends of the outer or main rails 4 4 of the track B are brought as closely as practicable.

A guide-plate 5 is secured to a plank or other substantial foundation 6, immediately below each of the four intersections of the rails of the track A with those of the track B. Two guides 7, which are of T-section, or provided with lateral flanges at top, are formed upon the upper side of each of the guides 5, said guides being respectively inclined in planes parallel with the ends of the intermediate rails 1 and 3 of the intersecting lines, and being connected at their inner ends. Two bridge-blocks 8, each having an angular-faced end portion, which, in one of the blocks, is adapted to fit closely in and close the adjacent opening or space between an intermediate and a main rail of one of the intersecting lines, and, in the other block, to close the adjacent space between a main rail of one line and an intermediate rail of the intersecting line, are fitted to slide on the guide 7 toward and from the inner sides of the rails of said lines, the bridge-blocks being, for this purpose, longitudinally recessed at bottom in conformity with the transverse section of the guides 7. The tops of the bridge-blocks are on a level with those of the rails, and one of the two faces which meet at an angle on their inner ends abuts against the side or the end, as the case may be, of a main rail of one line of tracks when the block is moved into position to close the adjacent opening between said main rail and the intermediate rail of the intersecting line or of its own line. The adjoining end faces of the guide-blocks are curved at top, in conformity with the rail-heads, and their sides adjoining said faces abut against the inclined ends of the intermediate rails 1 or 3, as the case may be, the guide-blocks thus bearing, by two relatively-inclined surfaces, against an intermediate rail of one of the intersecting lines and a main rail of the same or of the other line, according to their position. The bridge-blocks, when moved into the openings, completely close them, their inclined bearing-surfaces exerting a wedging action, and they provide a continuous bearing-surface for the wheels of a train passing over the line in which the openings are closed. It will, of course, be understood that when this is done on one line of track the other bridge-block of each guide-plate stands clear of the adjacent opening in the other line. The bridge-blocks 8 are prolonged at their outer ends beyond their guide-recesses to receive the connections, to be presently described, through which they are moved into and out of the openings between the rails, as from time to time required.

Rectilineal movement in reverse directions, respectively, as to each pair of bridge-blocks 8, is coincidentally imparted to all the bridge-blocks, in order to close them into the openings between the rails of one line and withdraw

them from those of the other, through a system of vibrating rockers and connections operated by a switchman, or by an operator in a signal-tower, when, as is preferably the case, the apparatus is connected with an interlocking signal system. A main rocker-plate 9 is bolted to a suitable foundation, which may be the same as that which supports two or more of the guide-plates 5 centrally between the four intermediate rails 1 1 3 3 of the crossing, and two supplemental rocker-plates 10 are similarly supported between the rails of each of the intersecting tracks at a suitable distance from the intermediate rails to enable rod connections to be made with the bridge-blocks thereof, substantially in line longitudinally with said bridge-blocks. A vertical pivot or bearing pin 11 is formed on or fixed in each of the rocker-plates 9 10 10 10 10, and main and supplemental rockers 12 13 are mounted to vibrate freely on said pivots.

The main and supplemental rockers are of substantially similar construction, each being composed of a central tubular body or sleeve, fitting the pivot of its plate, and arms projecting laterally from said sleeve. The main rocker 12 has four arms disposed in pairs on opposite sides of its central plane, while the supplemental rockers 13 have only three arms, a pair of which is located on one side of the central plane of each rocker, and the third on the opposite side about midway between the arms of the pair. The arms of the pair of each supplemental rocker 13 are connected, by rods or links 14, with the bridge-blocks 8 of the adjacent intermediate rail 1 or 3, and the third arms of the several supplemental rockers are connected, by rods or links 15, with the arms of the main rocker 12. One of the rods or links 15 is prolonged beyond its connection with the supplemental rocker, and provided with an eye 16 or other preferred means for connection with a suitably-located operating-lever, or with an interlocking system, if desired.

The connections between the main and supplemental rockers, and between the supplemental rockers and the bridge-blocks, are preferably, as shown, made by rods having their ends bent at right angles to fit into corresponding openings in the rockers and bridge-blocks. The rods 14 may be held in position in the bridge-blocks 8 by split pins 17 or keys passing through their upper ends, and in order to prevent the displacement of their opposite ends from the supplemental rockers 13 and to prevent displacement of the rods 15 from either the main or the supplemental rockers each of said rockers is provided with a displacement-guard 18, consisting of a sleeve fitting removably around the body of the rocker, and having a corresponding number of arms which project over the rods 15 and prevent them from being lifted out of their positions in the rocker. The displacement-guard is prevented from rotating independently of the rocker by any suitable stop,

as, for example, a projection engaging a recess in the rocker, and, after being placed in position on the rocker, a split pin 19 is passed through the pivot 11 to hold the rocker and
5 displacement-guard in normal position horizontally on the rocker-plate.

In operation, movement of the rod 15, through the connection 16, in either direction, is imparted, through the rocker system, to the
10 four bridge-blocks 8 of one line of track, which are thereby moved into the openings thereof, to form an unbroken track, and the bridge-blocks of the other line are coincidentally withdrawn from the openings of that line. Movement of the rod 15 in the opposite direction
15 similarly, but reversely, actuates the several bridge-blocks and puts the other intersecting line in condition for the passage of trains over the crossing.

It will be obvious that my improvement is applicable in crossings of various angles other than a right angle, it being only necessary that the angles of the guides and of the relatively-inclined end and side faces of the guide-
25 blocks shall be correspondingly varied in each case. The rectilinear traverse of the bridge-blocks into and out of position to close the openings of either line, and form part of the track thereof, is very short, as it need
30 be but slightly greater than the width of the head of a rail. The blocks are accurately guided in their movements by their long bearings on the fixed guides, and are firmly held in position for the passage of trains over
35 them by the wedging action of their inclined bearing-faces against the rails on each side of the openings in which they fit. The guide-plates and rocker-plates may be set on simple and inexpensive foundations, and they, as
40 well as all the moving members of the apparatus, are readily accessible for removal and replacement whenever required, and are exempt from liability to breakage or derangement by passing trains, or inoperativeness
45 through being clogged by snow or ice.

I claim as my invention and desire to secure by Letters Patent—

1. In a railroad-crossing, the combination, substantially as set forth, of two intersecting
50 lines of track, guide-plates, each fixed below one of the points of intersection thereof, two bridge-blocks fitted to traverse at an angle one to the other on guides on each of said plates, and operating mechanism for moving
55 said bridge-blocks into, and out of, openings between rails of the intersecting lines.

2. In a railroad-crossing, the combination, substantially as set forth, of two intersecting
60 lines of track, the intermediate or crossing rails of which have inclined end faces separated by openings or spaces from the adjoining rails, guide-plates, each fixed below one of the points of rail intersection, two bridge-blocks fitted to traverse at an angle one to
65 the other on guides on each of said plates, each having relatively-inclined faces, one of

which is adapted to abut against the inclined end face of an intermediate rail and the other against the rail adjacent thereto, and operating mechanism for moving said bridge-blocks
70 into and out of the openings at the ends of the intermediate rails.

3. In a railroad-crossing, the combination, substantially as set forth, of two intersecting
75 lines of track, a guide-plate fixed below each point of intersection thereof, two bridge-blocks fitted to traverse on guides on said plate, each having two angular end faces and a side bearing-face opposite and inclined relatively to one of said end faces, and operating
80 mechanism for moving said bridge-blocks into and out of openings between rails adjoining the points of rail intersection, in which one end face of a bridge-block stands in line with the inner sides of the adjoining rails, and the
85 other end face and opposite side bearing-face abut against the rails at the opposite ends of the opening.

4. In a railroad-crossing, the combination, substantially as set forth, of two intersecting
90 lines of track, having openings or spaces between the intermediate rails and the outer or main rails of each line at each point of intersection, a guide-plate fixed below each point of intersection, two T-headed guides on each
95 of said plates, each parallel with one end of one of said openings, two relatively-movable bridge-blocks mounted on each guide-plate, each having a lower longitudinal recess corresponding in section with the guides, and operating
100 mechanism for traversing the bridge-blocks, in opposite directions on the guides, into and out of the openings in the lines of rails.

5. In a railroad-crossing, the combination, substantially as set forth, of two intersecting
105 lines of track, having openings or spaces at the inner sides of their rails at each point of intersection, a series of bridge-blocks, each adapted to close one of said openings, a main and supplemental rockers, each journaled on a vertical pivot, rods connecting two of the bridge-blocks with arms on each supplemental rocker, and connecting an arm of each
110 supplemental rocker with an arm of the main rocker, and displacement-guards, removably connected to each of the rockers and extending over the rods which are connected thereto.

6. A bridge-block for railroad-crossings, having an end portion formed of two surfaces, each angular to the longitudinal center line of the block, one of said end surfaces being curved at top in conformity with a rail-head and adjoining a side bearing-surface at an obtuse angle therewith, said block having
120 a lower longitudinal groove or recess to fit a fixed guide, substantially as set forth.

GEO. B. LEIGHTON.

Witnesses:

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