

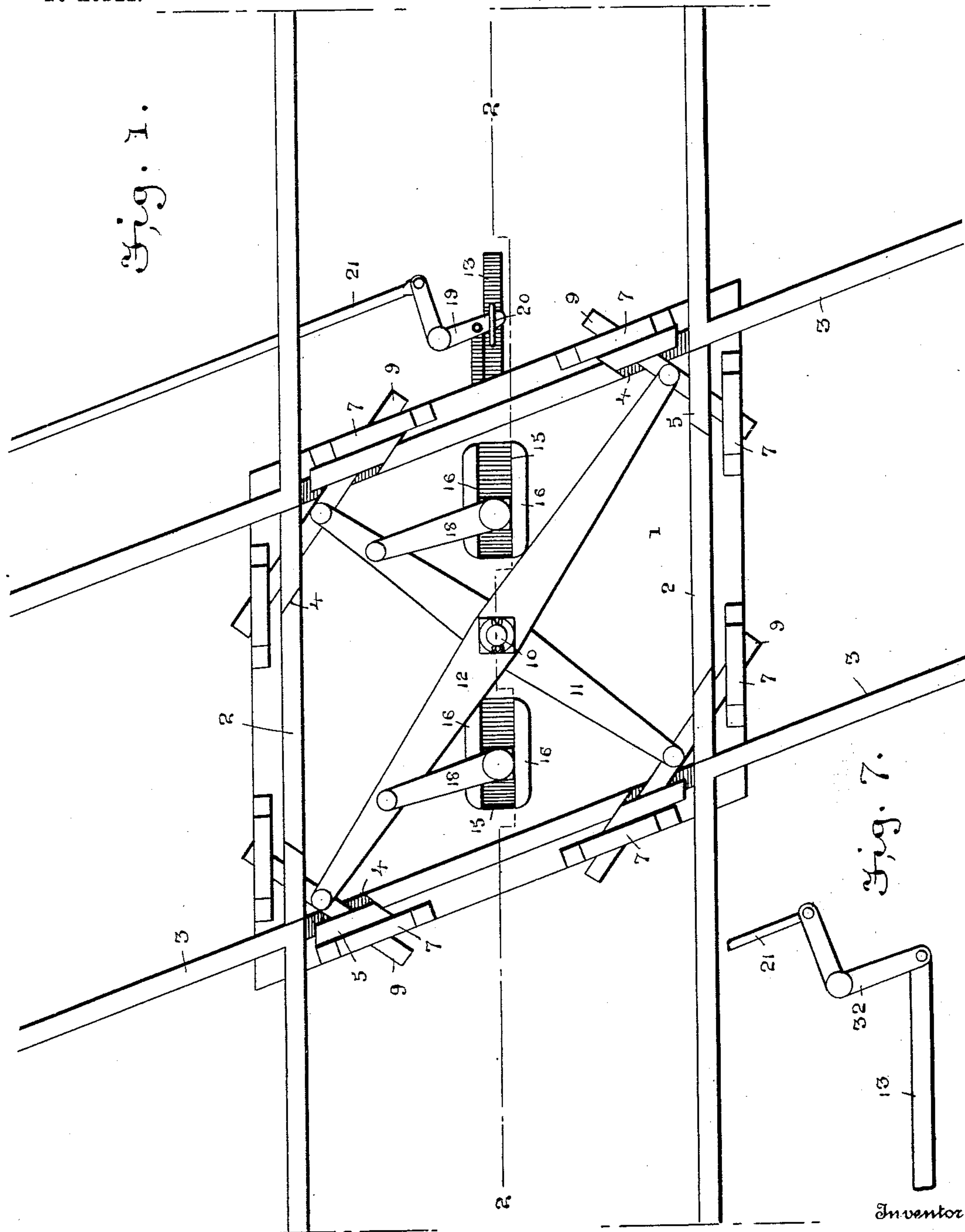
No. 751,602.

PATENTED FEB. 9, 1904.

A. M. BEALL.  
RAILWAY CROSSING.  
APPLICATION FILED APR. 17, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

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No. 751,602.

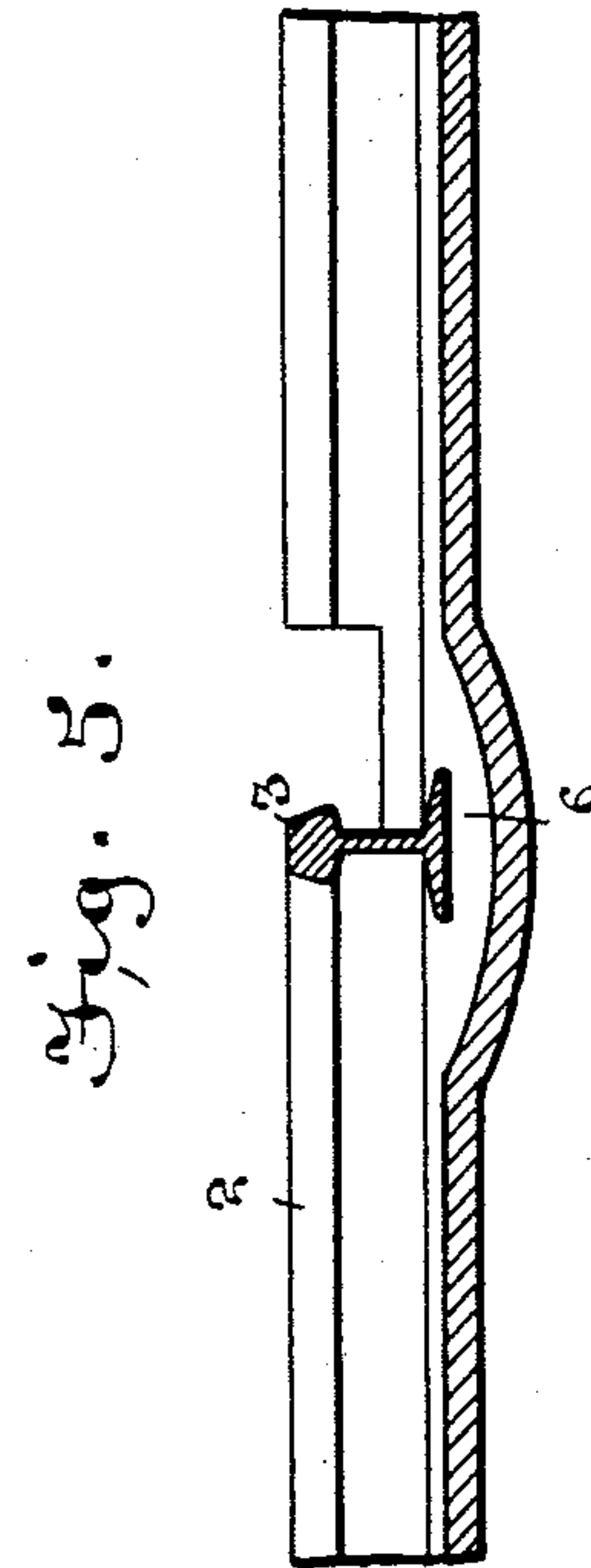
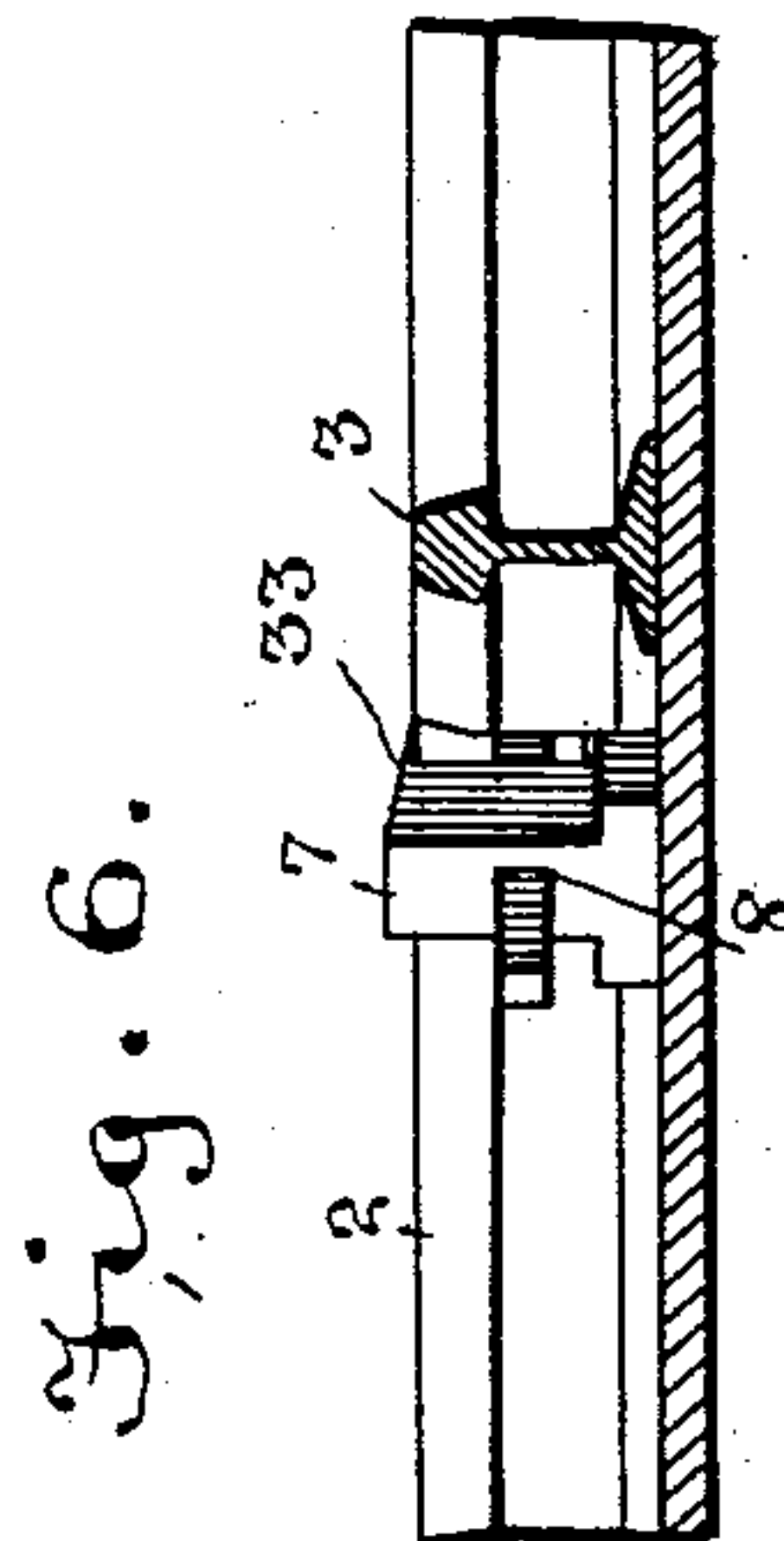
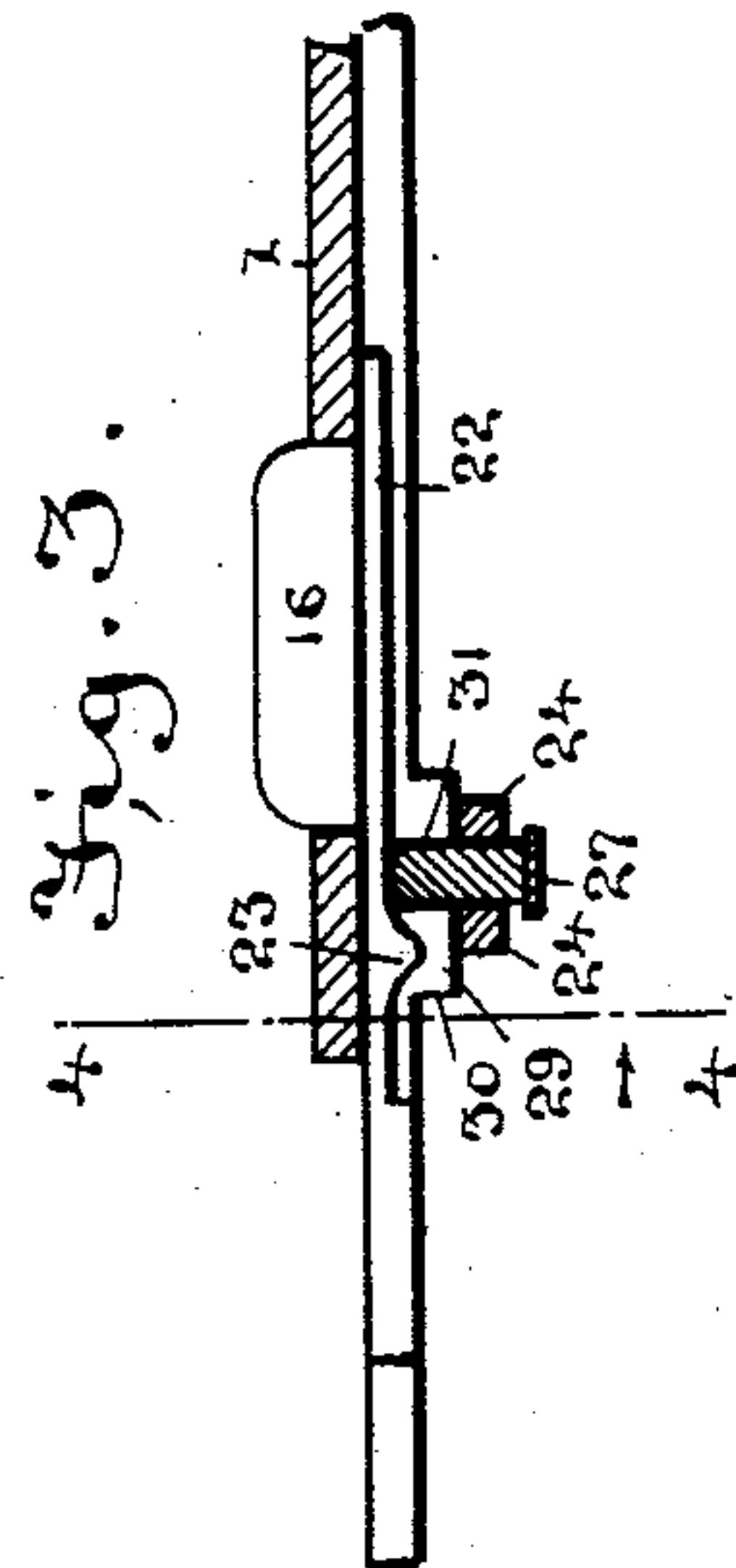
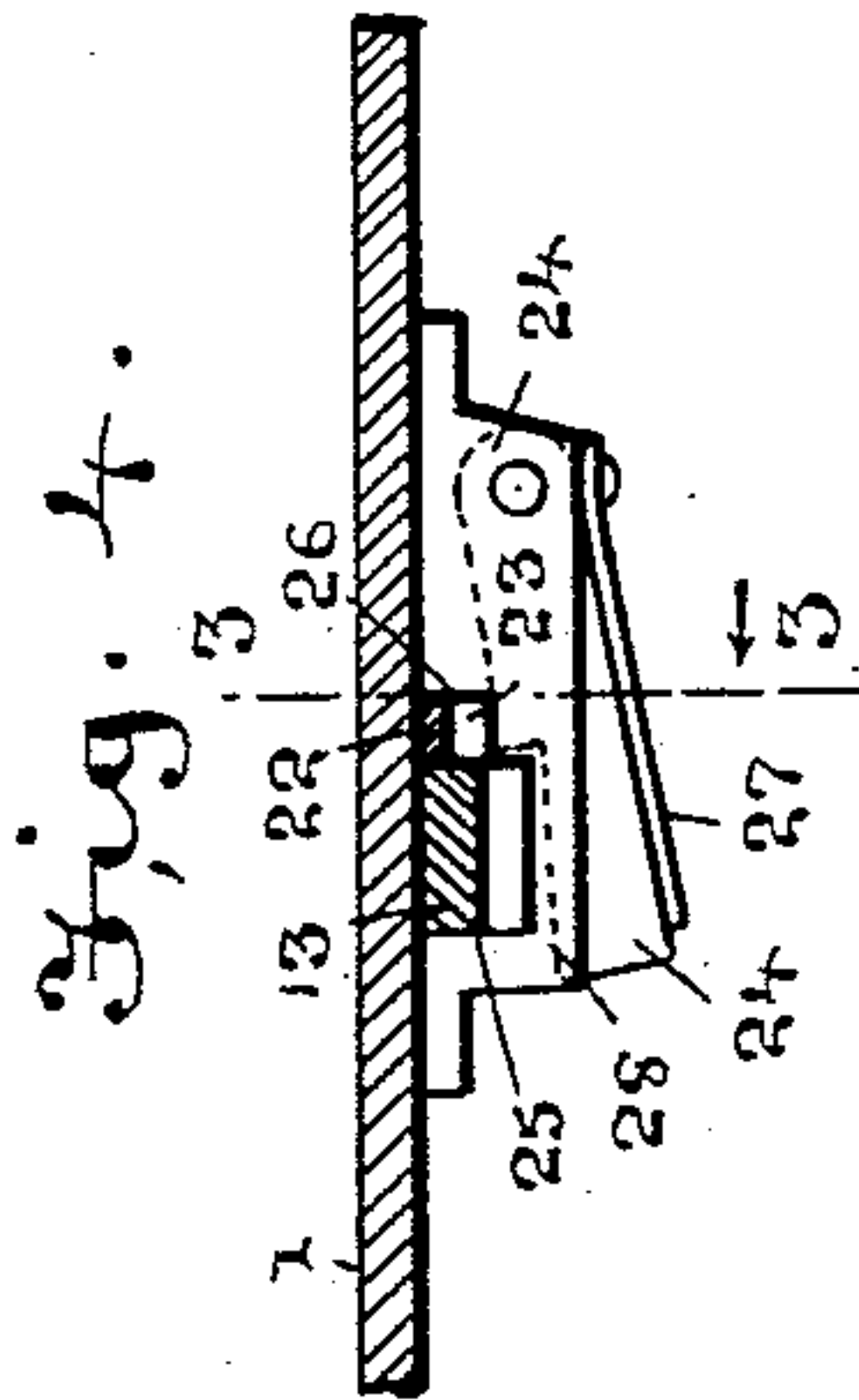
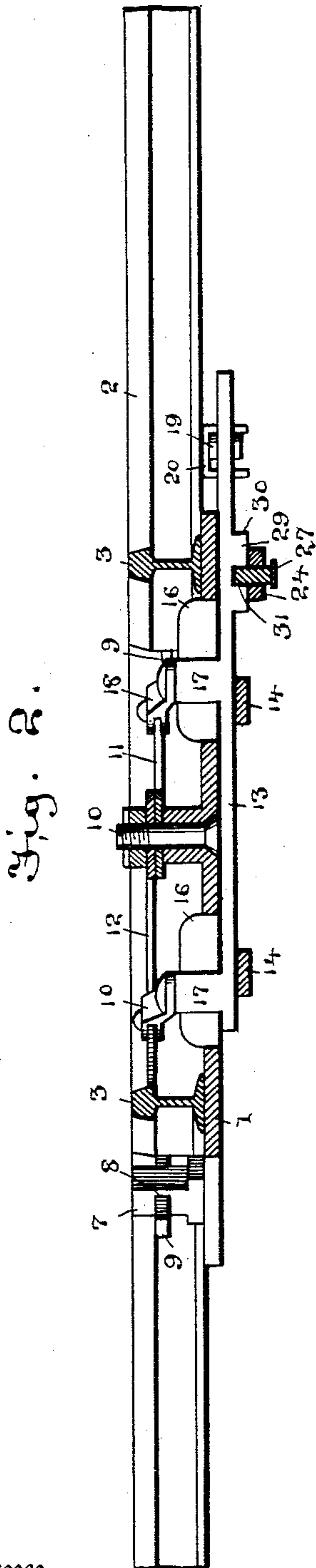
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2 SHEETS—SHEET 2.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## RAILWAY-CROSSING.

SPECIFICATION forming part of Letters Patent No. 751,602, dated February 9, 1904.

Application filed April 17, 1903. Serial No. 153,131. (No model.)

*To all whom it may concern:*

Be it known that I, ALLEN M. BEALL, a citizen of the United States, residing at South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Railway-Crossings; 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.

This invention relates to railway-crossings; and the objects are, first, to provide a crossing having stub-rails or blocks movable into and out of seats in the rails at the angles of the crossing, so that trains may be run in both directions over the crossing without jar or injurious vibration, and thus reduce the wear and tear on wheels and trucks and prolong the life of rolling-stock, as well as avert accidents; second, to provide a crossing wherein stub-rails or blocks are employed to make a continuous even surface to the tread of the rails and to use in connection therewith a locking mechanism which will operate to maintain the stub-rails or blocks in positive position in relation to the rails and obstruct accidental movement thereof, and, third, to provide a crossing having means for preventing injury to rolling-stock and including mechanism of a simple and effective nature which is positively and reliably operative to arrive at the result sought.

With these and other objects and advantages in view the invention consists in the construction and arrangement of the several parts, which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is a top plan view of a crossing embodying the features of the invention. Fig. 2 is a section on the line 2 2, Fig. 1. Fig. 3 is a section on the line 3 3, Fig. 1. Fig. 4 is a section on the line 4 4, Fig. 1. Fig. 5 is a detail section showing the reinforce for the rails at the point of intersection of the latter where the movable parts or stub-rails operate. Fig. 6 is a detail sec-

tion on the line 6 6, Fig. 1. Fig. 7 is a detail plan view of a modified construction of a part of the mechanism.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The numeral 1 designates a floor or plate which is mounted in practical application on ties or sills and firmly secured to the latter by any well-known means. The intersecting track-rails 2 and 3 of the crossing are laid on this floor and secured thereto, the said rails being continuous at the points of intersection at their base-flanges and their surfaces interrupted or broken only at the points where recesses or seats 4 are formed to receive stub-rails or blocks 5, said seats being provided by cutting away portions of the rails and involving a part of the web of each rail. The rails are continued for any desired distance beyond the limits of the floor or plate 1 in order that their integral relation to the part extending over the floor may add strength to the sections constituting the crossing and, as clearly shown by Fig. 5, the rails are reinforced at the points where the seats are formed by depending enlargements 6, which obstruct any tendency to breakage by the weight of the rolling-stock passing over the crossing. By reference to Fig. 1 it will be seen that the improved crossing is applied to intersecting roads or tracks running at angles other than right angles to each other; but it will be understood that the same organization is equally well adapted and applicable to roads or tracks running at right angles to each other, the only change necessary being that of making the seats or recesses and stub-rails or blocks to fit each other and to suit the angles of the intersecting rails at the crossing.

The seats or recesses 4 are located close to the angles of intersection of the rails 2 and 3 and are deep enough to afford a firm seat for the stub-rails or blocks 5. The stub-rails or blocks 5 are each shiftable or movable at an angle to the seat or recess therefor, and when



fully moved into their seats the said blocks or stub-rails have their upper surfaces flush with the upper surfaces of the rail-treads, and the end of each seat and its stub-rail or block farthest from the adjacent rail 2 or 3 is cut at an angle to provide a joint, which will be most practical to reduce wear on the wheels of the trucks, and in the event that the stub-rails or blocks and the mechanism connected thereto at any time fail to operate there would be no serious result as compared to the ordinary crossing, because the seats are comparatively short in length and would be readily spanned by the treads of the wheels moving thereover.

On the outer sides of the rails 2 and 3, close to the angles of intersection thereof and rising from the floor or plate 1, are guides 7, which in the present instance have angularly-disposed slots 8 formed therein to movably receive slide-bars 9, to which the stub-rails or blocks 5 are rigidly secured, the length of said bars 9 depending on the dimensions of the angles formed by the intersection of the rails 2 and 3. It will be perceived that the stub-rails or blocks are so arranged and positioned that when one set is moved to complete the continuous tread-surface of one set of track-rails the other set of stub-rails or blocks is moved outwardly from the track-rails, with which they cooperate to afford free and unimpeded passage for the flanges of the car-wheels over the rails into which the stub-rails or blocks have been adjusted.

Means are provided for simultaneously throwing one set of stub-rails or blocks into their seats and shifting the remaining set of stub-rails or blocks outwardly from their seats, and such means are so organized and positioned that the alternate movement of the sets of stub-rails or blocks will be accurate and reliable. This means comprises a stud or analogous upright projection 10, rising from the center of the floor or plate 1, and thereon are pivotally mounted and secured cross-levers 11 and 12, having their outer ends pivotally connected to the slide-bars 9, the outer ends of the levers engaging the slide-bars at points intermediate of the location of the stub-rails or blocks 5 on said bars, so that when the levers are actuated the slide-bars are correspondingly moved in their guides or bearings 7 and with them the stub-rails or blocks 5, which are shifted into or out of their seats 4. Under the floor or plate 1 in the center of one of the tracks a sliding shifting bar or rod 13 is mounted and moves in guides 14, secured to or forming a part of the floor or plate. Said floor or plate has central slots 15 formed therein on opposite sides of the center, and in alinement over the bar or rod 13 and at opposite sides of said slots are guard-flanges 16. Projecting upwardly from the bar or rod 13 are lugs or projections 17, which closely though movably bear

against the guard-flanges and have links 18 pivotally attached to the upper ends thereof—one on each—the opposite ends of the links being pivotally attached to the levers 11 and 12, respectively. The connection of the links to the levers is such as to accomplish the required movements of the stub-rails or blocks into and out of their seats, and through the medium of the links 18 the movement of the rod or bar 13 in opposite directions insures a corresponding actuation of the levers 11 and 12 to alternately throw one set of stub-rails or blocks into their seats and the other set of stub-rails or blocks out of their seats. The rod or bar 13 is actuated by a bell-crank lever 19, fulcrumed adjacent to said bar or rod and having one arm loosely extending through a loop or analogous device rising from the outer extremity of said rod or bar to permit a certain degree of movement of the bell-crank lever in opposite directions before the rod or bar is shifted, for a purpose which will be presently explained. To the other arm of the bell-crank lever 19 a connecting-rod or similar device 21 is movably attached and may extend away therefrom any distance to a switch-tower or switch-stand, which will be employed for controlling the movement of the stub-rails or blocks to render either set of track-rails continuous or open at the points of intersection thereof.

To maintain the stub-rails or blocks in their adjusted positions and avoid accidental movement thereof, locking mechanism is employed and consists of a releasing-bar 22, arranged close to one side edge of the rod or bar 13 and pivotally attached to the arm of the bell-crank lever 19, which loosely engages said rod or bar. The releasing-bar 22, as clearly shown by Fig. 3, has a depending cam projection 23 thereon which operates to control the position of a dog or analogous device 24, disposed at an angle to and located under the rod or bar 13 and releasing-bar 22 and pivotally held at one end by depending hangers 24<sup>a</sup>, which are slotted, as at 25 and 26, to permit the rod or bar 13 and releasing-bar 22 to move therethrough, as shown by Fig. 4. The dog 24 is held up in normal position by a stiff spring 27, bearing against the under edge thereof, and the upper edge of said dog adjacent the free end is formed with a recess 28 to reduce the width of the same to effect the operation desired. The rod or bar 13 has a depending boss or projection 29 with an outer shoulder 30 and an intermediate slot 31, and against the said shoulder or into the slot the recessed end of the dog is adapted to be forced to thereby hold the rod or bar 13 against movement. The cam projection 23 on the releasing-bar 22 depresses the dog to such an extent as to disengage the latter from the shoulder 30 or slot 31, and for this reason the releasing-bar is permitted to be first shifted either inwardly or outwardly before



movement of the rod or bar 13 ensues, and the parts are so proportioned and timed that the dog 24 will have been fully depressed to release the rod or bar 13 just as the arm of the bell-crank lever, to which the releasing-bar is attached, engages either end of the loop 20.

In some instances it is proposed to dispense with the use of the locking mechanism just described, and in this case the rod or bar 13 will have a bell-crank lever 32 similar to the bell-crank lever 19 directly pivoted thereto, as shown by Fig. 7. Another slight modification in structure is shown by Fig. 6 and consists in providing the guide 7 with an inwardly-projecting housing-flange 33, which extends over close to the head of the adjacent track-rail and is high enough to permit the stub-rail or block to move thereunder. The purpose of the flange 33 is to prevent coupling-pins or other devices or objects falling between the guide 7 and the adjacent track-rail and block or obstruct the movement of the stub-rails. It is proposed to employ the flanges 33 in connection with the guide 7 whenever found necessary.

In the arrangement of the crossing as shown in Fig. 1 the stub-rails or blocks 5 are in their respective seats in the parallel rails 2 and the stub-rails or blocks thrown out from the seats of the rails 3 to free or clear the passage of car-wheels moving over the track-rails 2. When it is required to change the position of the stub-rails, so as to remove those from the seats in the rails 2 and shift those into the seats of the rails 3, the rod or analogous device 21 is moved toward the rails 2 to shove the rod or bar 13 inwardly under the plate or floor 1 to close the rails 3 and form clear passages for the flanges of the wheels moving over said rails. In either adjustment the surfaces of the rail-treads will be continuous, even, and smooth.

Having thus fully described the invention, what is claimed as new is—

1. In a railway-crossing, the combination of two intersecting tracks, the rails of which are continuous and formed with seats at their angles of intersection, slide-bars movable diagonally through the seats and each bar having a pair of stub-rails to fit within and close the seats, and means to move the slide-bars to throw the stub-rails into and out of the seats.

2. In a railway-crossing, the combination of two intersecting tracks, the rails of which are continuous, and formed with seats at the angles of intersection thereof, pairs of stub-rails cooperating with the seats at each angle of intersection, and means for operating the pairs of stub-rails to cause them to alternately close one set of seats and open another set.

3. In a railway-crossing, the combination of intersecting tracks, the rails of which are formed with seats at the inner angles of their intersections, guides arranged on the outer

sides of the track-rails close to the seats and having openings therethrough, sliding elements mounted in the openings of said guides, a pair of stub-rails secured to each sliding element, and means connecting all of the sliding elements for simultaneously actuating the latter.

4. In a railway-crossing, the combination of two intersecting tracks, the rails of which are continuous and formed with seats at the inner angles of their intersections, stub-rails to fit within and close the seats, sliding elements to which the stub-rails are secured, levers connecting the sliding elements for simultaneous operation, and a shifting bar for actuating said levers and having locking mechanism in connection therewith.

5. In a railway-crossing, the combination of intersecting tracks, the rails of which are formed with seats at the inner angles of their intersections, stub-rails to fit within and close the seats, sliding elements to which the stub-rails are secured, means to move the sliding elements to throw the stub-rails into and out of the seats and having locking mechanism cooperating with a part thereof, and a releasing-bar for throwing the locking mechanism out of engagement from a part of said means.

6. In a railway-crossing, the combination of intersecting tracks, the rails of which are formed with seats at the inner angles of their intersections, stub-rails to fit within and close the said seats, means for operating the stub-rails, a shifting bar connected to said means, a locking-dog adapted to engage different parts of the said shifting bar, and a releasing-bar having a cam projection to throw the dog out of engagement from the shifting bar.

7. In a railway-crossing, the combination of intersecting tracks, the rails of which are continuous and formed with seats at the inner angles of their intersections, stub-rails to fit within and close the seats, mechanism for simultaneously operating the stub-rails and including a shifting bar, a dog arranged adjacent to a part of the shifting bar to lock the latter against movement, and a releasing-bar having a projection to engage the dog and throw said dog out of contact from the shifting bar, said releasing-bar having a movement previous to that of the shifting bar.

8. In a railway-crossing, the combination of intersecting tracks, the rails of which are formed with seats at their angles of intersection, stub-rails to fit within and close the seats, mechanism connected to the stub-rails for operating the same and including a shifting bar, a locking element cooperating with the shifting bar, a releasing-bar having a projecting member to engage the locking element to throw the latter out of contact with the shifting bar, and primary actuating mechanism loosely engaging the shifting bar and having the releasing-bar pivoted thereto.



9. In a railway-crossing, the combination of  
intersecting tracks, the rails of which are  
formed with seats at their angles of intersec-  
tion, guides close to the outer portions of the  
5 rails and adjacent to the seats, supports slid-  
ingly mounted in the guide and carrying pairs  
of stub-rails to fit within and close the seats,  
the guides having inwardly-projecting flanges  
under which the stub-rails are adapted to move,

and means for simultaneously operating the 10  
stub-rails.

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

ALLEN M. BEALL.

Witnesses:

CHAS. A. DAVEY,  
JOHN C. ULICH.