No. 830,927. PATENTED SEPT. 11, 1906.

G. A. RANSOM.

RAILWAY CROSSOVER.

APPLICATION FILED JULY 2, 1906.

2 SHEETS—SHEET 1.

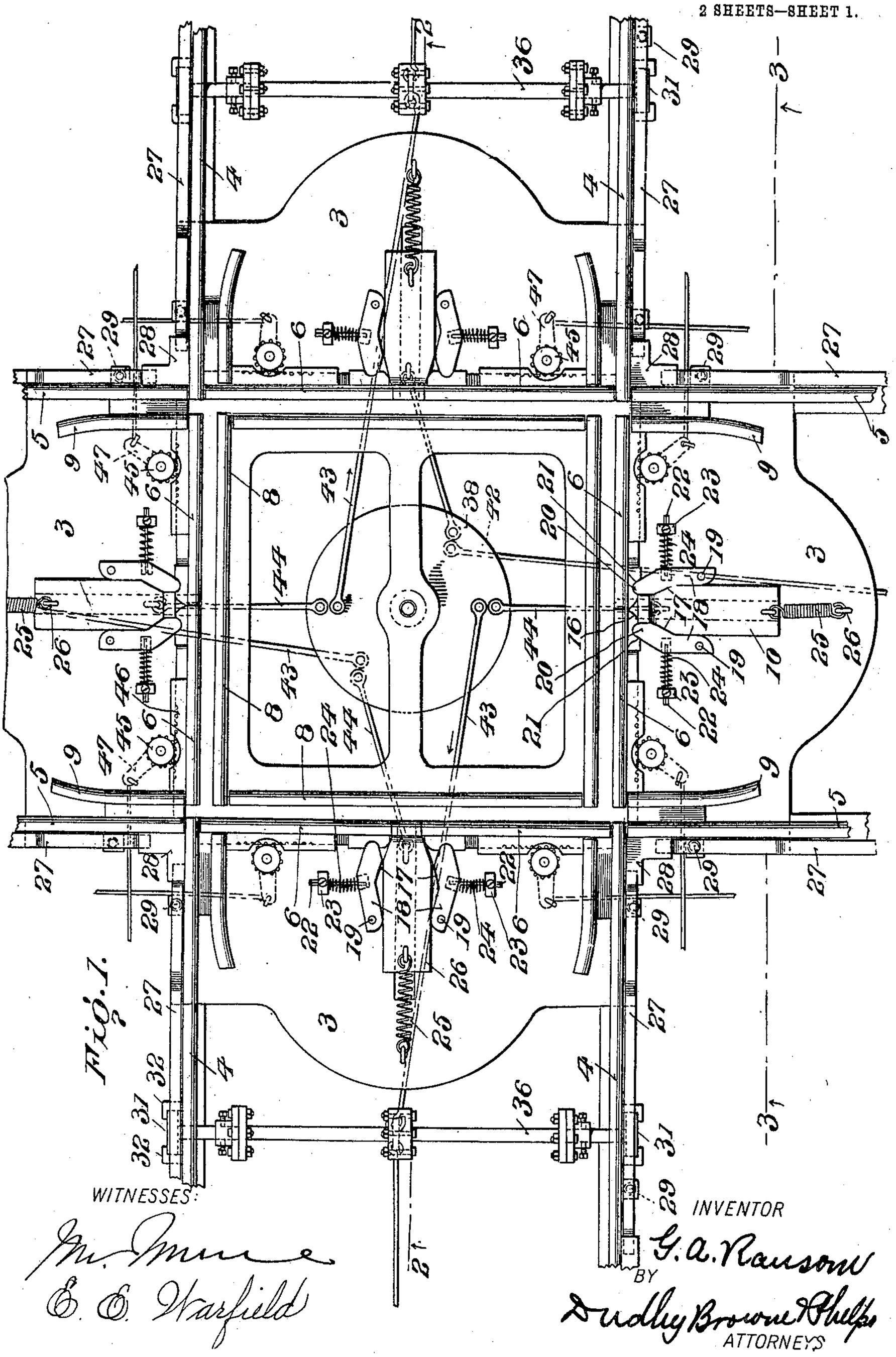

Fig. 1.

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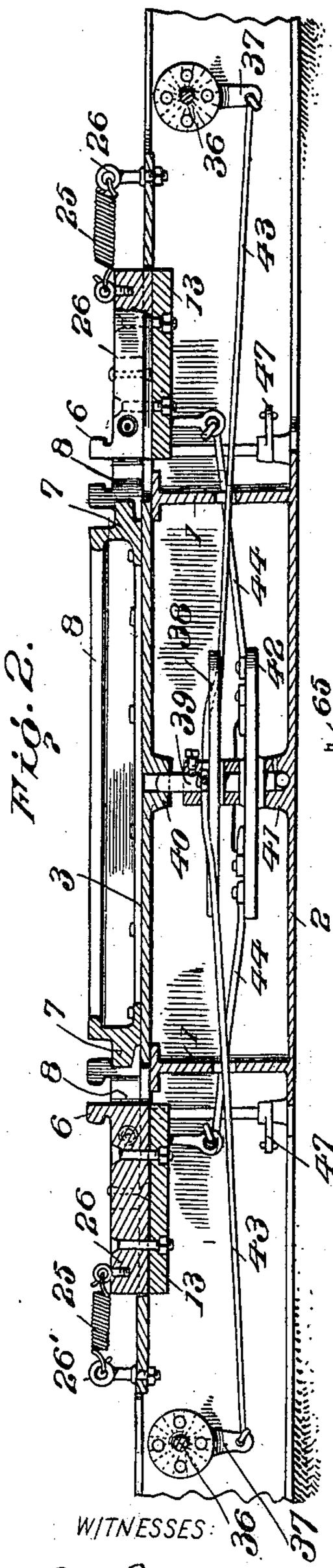

Fig. 2.

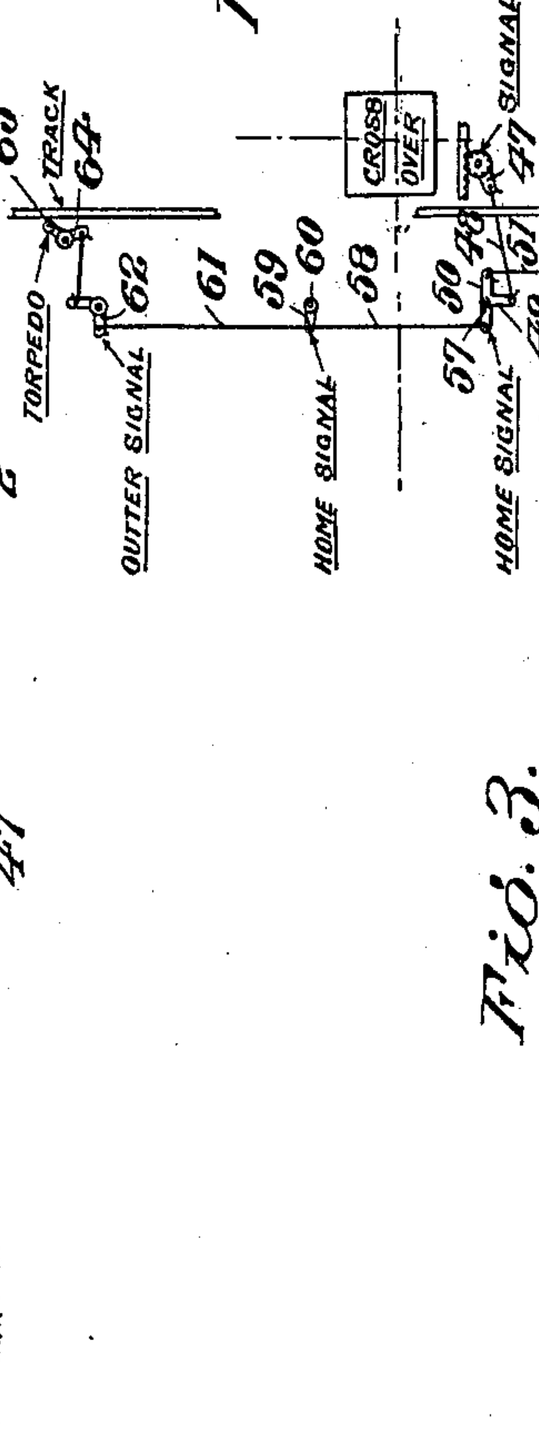

Fig. 4.

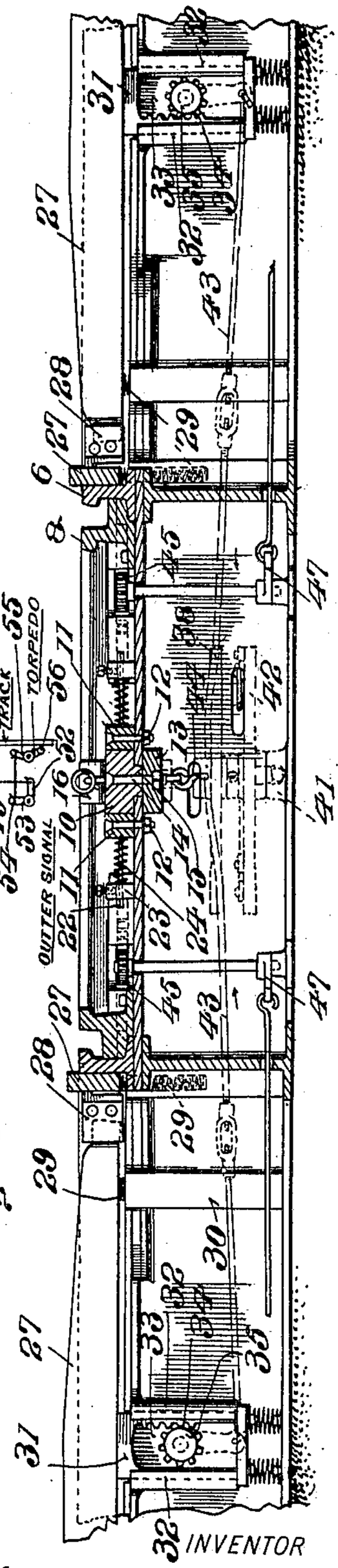

Fig. 3.

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GEORGE A. RANSOM, OF OTTAWA, OHIO.

RAILWAY-CROSSOVER.

No. 830,927. Specification of Letters Patent. Patented Sept. 11, 1906.

Application filed July 2, 1906. Serial No. 324,514.

To all whom it may concern:

Be it known that I, GEORGE A. RANSOM, a citizen of the United States, residing at the city of Ottawa, in the county of Putnam and State of Ohio, have invented certain new and useful Improvements in Railway-Crossovers; 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 relates to certain new and useful improvements in railway-crossovers.

In the ordinary form of crossover there are two gaps in each rail over which the wheels pass. These gaps are left to permit the flange of the wheels on the other tracks to pass through. The result of the wheels going over these gaps is that the rolling-stock is subjected to jar and vibration, which produces undue wear and strain on the rolling-stock, and thus increases the liability of a breakdown. The jar and pound of the wheels over the gaps of the crossovers causes the rails of the crossovers to wear out and break very rapidly, and the breaking of the rails due to this pound and jar has been the frequent cause of accidents.

It is the object of my invention to close this gap for the passage of a train, whereby the wheels of rolling-stock pass over the crossover without any jar or vibration, and it is possible for a train to go over a crossover constructed in accordance with my invention with no more jar than is felt in running at any other portion of the track. I accomplish this result without in any way increasing the liability of the train to be derailed, as if the means by which the gaps are closed should fail to operate the passage of the train will not be interfered with and it will only result in the train receiving the ordinary jar which is caused by the ordinary form of a crossover.

A further object of my invention is to provide a means operated by the movable portion of the rails of the crossover to set suitable signals on the track to be crossed.

Referring to the drawings, wherein I show one embodiment of my invention for the purpose of illustrating the same and wherein the same part is designated by the same reference-numeral wherever it occurs, Figure 1 is a top plan view of a crossover of two single tracks running at right angles to each other with parts broken away and in dotted lines to more clearly illustrate the invention. Fig. 2 is a longitudinal section taken on line 2 2 of Fig. 1. Fig. 3 is a section taken on line 3 3 of Fig. 1. Fig. 4 is a diagram showing how a set of signals may be controlled in accordance with my invention.

In the construction of my crossover I prefer to mount the same upon **I**-beams 1, though other suitable forms of support may be used, if desired. Between the **I**-beams I preferably place a plate 2 at the bottom of the **I**-beams to form a bottom for a box or casing located within the rails of the crossover, and 3 is a second plate forming the top of said casing. In this casing is mounted part of the mechanism for operating my device. These **I**-beams and the box or casing are placed in the bed of the track, so that the rails, which are located on top of the **I**-beams, will be supported at a suitable height.

4 4 designate the rails of one track, and 5 5 the rails of the other. These rails are of the ordinary form of construction and are suitably supported by the **I**-beams, as shown, in order to provide sufficient space to locate parts beneath the same. The portion of the track formed which is located between the rails 4 4 and 5 5 is made up of a pair of rails 6 6, these rails being of such a length that when their adjacent ends are in contact there will be a space or gap left at each end for the passage of the flanges of the car-wheels on the other. All the parts are duplicates of each other, and I will in the further description of the form of my invention shown refer only to one set of the mechanism, it being understood that this description will apply equally to the other sets. On each side of the rails 6 6 are formed guides 7 8, in which the sections 6 6 are adapted to slide longitudinally. As shown, the guide 7 is formed on the inner side of the guard-rail 8, which is of the ordinary form of construction, and placed in the usual manner inside the crossover.

9 represents the portions of the guard-rail located outside the crossover to insure the flange properly passing into the slot between the rails.

10 is a slide mounted on the upper portion of the cover-plate 3 and between suitable guides 11 11, which are secured to the cover-plate by any suitable means—as, for instance, the bolts 12.

13 is a plate on the under side of the cover-

plate 3, the plate 13 being secured to the sliding plate 10 by means of the bolts 14 or any other suitable means.

15 is a slot formed in the cover-plate, through which the bolts 14 pass.

By the construction just described it will be seen that the plate 10 is adapted to slide on the cover-plate toward and away from the rail 6 in a right line.

The slide 10 is preferably provided at its forward end with a nose 16, the nose being narrower than the width of the plate at its body portion.

17 17 represent cam-faces formed on the side of the plate in the rear of the nose.

18 represents a pair of dogs pivoted at 19 to the cover-plate 3 alongside of the slide-plate 10. These dogs at their inner end are provided with noses 20 20, which engage suitable notches 21, formed in the sliding rails 6.

22 22 represent rods, one end of which is attached to the sides of the dogs 18, the other end of the rods passing through the guides 23 23.

24 24 represent springs surrounding the rods 22 and located between the dogs and the guides 23, whereby the springs hold the dogs against the cam-faces 17 of the slide.

From the construction just described it will be seen that when the slide is moved toward the rail 6 the dogs will be spread apart by the action of the cam-faces 17 on the sides of the slide and force the rails 6 apart, so that their outer ends will abut against the ends of the rails 4 or 5, as the case may be. The further movement of the plate will force the nose 16 of the plate 10 into the opening formed by the movement of the rails 6 and completely fill the same, thus forming a continuous way for the wheels over the crossover.

25 is a spring one end of which is connected to the rear end of the plate 10 and the other to a suitable hook 26, formed on the plate 3, which will withdraw the plate when the parts are to be returned to their normal position, the withdrawal of the plate opening the gap between the rails 6 and permitting the dogs through the operation of the springs 24 to return the rails to their normal position, which will leave a gap between the outer ends of the rails 6 and the ends of the rails 4 or 5, as the case may be.

In order to operate the slide 10 in the manner just described, I have provided a series of depressible plates, one being mounted alongside each of the rails 4 and 5, the plate being connected by a suitable mechanism to the slides 10, whereby when the plates are depressed the corresponding rail-sections 6 6 will be operated, as has just been described.

27 designates the depressible plate, which is mounted alongside the tracks 4 and 5. This depressible section may be of any desirable character, and, as shown, its ends are guided in end guides 28, and it is supported by spring 29, located between the under side of the plate 27 and the portion 30 of the supporting-bed. The plate 27 is higher than the adjacent track-section, so that it will be depressed by the passage of the wheels over the track.

31 is a block located beneath the under edges of the plate 27 and adapted to move vertically in ways 32. This block is preferably and as shown provided with a central opening 33. On the inner face of one side of the opening is formed a rack 34, meshing with a gear 35, mounted on each end of a shaft 36, which extends between the rails and is suitably supported thereunder. From this construction it will be seen that when the plate 27 is depressed the block 31 will be depressed, which, through the rack 34, will operate the gear 35 and rotate the shaft 36.

37 is a crank-arm mounted on the shaft 36 between the gears 35. It is to be understood that there are four of these shafts and four sets of operating mechanisms therefor, one located in each track outside the crossovers.

38 is a disk mounted on a shaft 39, which is journaled in a depending bearing 40 on the under side of the plate 3 and in bearing 41 on the upper face of the plate 2. 42 is a second disk, which is also mounted upon the shaft 39, both the disks 38 and 42 being loose on said shaft.

43 represents a series of rods which connect the arms 37 on the shaft 36 to the disks 38 and 42, the rods coming from the crank-arms of one track being connected to one disk and the rods coming from the crank-arms of the other track to the other disk.

44 represents rods which connect the disks with the respective slide-plates 10, the connections being such that a train passing over, for instance, the tracks 4 will operate the slides located between the tracks 5, and vice versa.

From the construction which has thus far been described it will be seen that a train as long as it holds one of the depressible plates depressed will cause, through the connections on the rails which form the continuation of the track on which the train is running, to close the gap, and the slide-plate 10 will move inwardly to close the gap formed between the rails 6. The rails will be held in this position until all the wheels of the train have passed off the spring-plate on the opposite side of the crossover. As soon as the train has completely passed the springs will operate to return the parts to their normal position. It is to be particularly noted in this connection that by mounting the device for closing the gap formed by the outward movement of the rail 6 outside the crossover there is no danger of a train being derailed in case the device fails to properly op-

erate. If the mechanism does not operate at all, then there will be the ordinary crossover, with the ordinary gaps left at the ends of the rails 6. If the slide should stick after it has made a part of its movement, there will be a decrease-gap at the outer end of the rails 6 and a small gap between the rails, thus dividing the two normal gaps into three smaller ones.

In order to prevent a train passing over the track which is blocked by the movement of the rail 6, I preferably provide signals for such track operated by the movement of the rails 6. The effect of this is that this signal will remain set at "danger" as long as the gap for the flanges is closed. In the form of my invention shown this is accomplished by mounting a gear 45 on the plate 3 adjacent to each of the rail-sections 6, the rail-sections being each provided with a rack 46, meshing with this gear. 47 is a crank-arm secured to the gear and adapted to be swung thereby. This crank-arm is connected to any suitable signaling means by which the signals will be set on the proper track in both directions to prevent the approach of the train when the rails 6 are in their outer position, the signals being set at "safe" when the rails 6 are in their inner position. I have shown one of such sets of signals diagrammatically in Fig. 4, in which the crank-arm 47 is connected by a wire 48 to one arm 49 of a three-armed bell-crank lever. Through a second arm 50 of this bell-crank is connected a wire 51, the other end of which is connected to the arm 52 of the bell-crank, whose other arm 53 is connected by a wire 54 to a lever 55, pivoted intermediate its ends and carrying at its end opposite that to which the wire 54 is attached a torpedo 56. By this construction it will be seen that when the track-section 6 moves in the direction to close the gap it will, through the wires and bell-cranks described, place a torpedo 56 on the track to act as a signal. To another of the third arm 57 of the three-armed bell-crank is connected a wire 58, which operates an arm 59 of a semaphore or other signal 60. This is also connected by a wire 61 to a bell-crank lever 62, which is connected by a wire 63 to a pivoted arm 64, which is adapted to place a torpedo 65 on the track at the opposite side of the crossover. From this it will be seen that when the rails 6 are moved apart by the passage of a train they will set signals on each side of the crossover of the other track from that over which the train is passing, and these signals will remain set until the rails 6 have been returned to their normal position. This will prevent any train passing over the crossover while the gaps through which the flanges of its wheels have to pass are closed, and thus prevent any derailment of the train.

While I have described what I believe to be the preferred form of my invention, I desire to have it understood that many changes may be made in the form, construction, and arrangement of parts without departing from my invention. It is also to be understood that the crossover construction may be used without the signaling apparatus, if desired, and that any other form of signaling means may be used for that shown and described.

It is also to be understood that I am not to be limited to the particular construction of mechanism for moving the rails apart herein shown and described.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a railroad-crossover, the combination with stationary rail-sections outside the crossover, of movable rail-sections within the crossover, means for moving the movable rail-sections for a pair of tracks away from each other to close the gap between the outside and inside rail-sections, and means moving from the outside of the crossover to fill the gap between the movable rail-sections.

2. In a railroad-crossover, the combination with stationary rail-sections outside the crossover, of movable rail-sections within the crossover, means for moving the movable rail-sections for a pair of tracks away from each other to close the gap between the outside and inside sections, means to fill the gap between the movable rail-sections, a signal and means controlling the signal operated by the movement of a movable rail-section.

3. In a railroad-crossover, the combination with stationary rail-sections outside the crossover, of movable rail-sections within the crossover, means for moving the rail-sections for a pair of tracks away from each other to close the gap between the outside and inside sections, means moving from the outside of the crossover to fill the gap between the movable rail-sections, a signaling means, and means for controlling the signal operated by the movement of a movable rail-section.

4. In a railroad-crossover, the combination with stationary rail-sections outside the crossover, of movable rail-sections within the crossover, means for moving the movable sections for each pair of tracks away from each other to close the gap between the outside and inside rail-sections, and means moving from outside the four sides of the crossover to fill the gap between each of the movable sections.

5. In a railroad-crossover, the combination with stationary rail-sections outside the crossover, of a movable rail-section within the crossover, a plate adapted to be depressed by a train when approaching the crossover, connections between said plate and the movable rail-sections to move said sections away from each other to close the gap between the outside and inside rail-sec-

tions, and means from the outside of the crossover to fill the gap between the movable rail-sections, said means being also operated by the plate.

6. In a railroad-crossover, the combination with stationary rail-sections outside the crossover, of movable rail-sections within the crossover, means for moving the movable rail-sections for a pair of tracks away from each other to close the gap between the outside and inside rail-sections, means to fill the gap formed between the movable rail-sections, a rack on each of said movable rail-sections, a gear meshing with said rack and a signal connected to said gear and adapted to be operated thereby.

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

GEORGE A. RANSOM.

Witnesses:

E. E. WARFIELD,

FRANCES M. PHELPS.