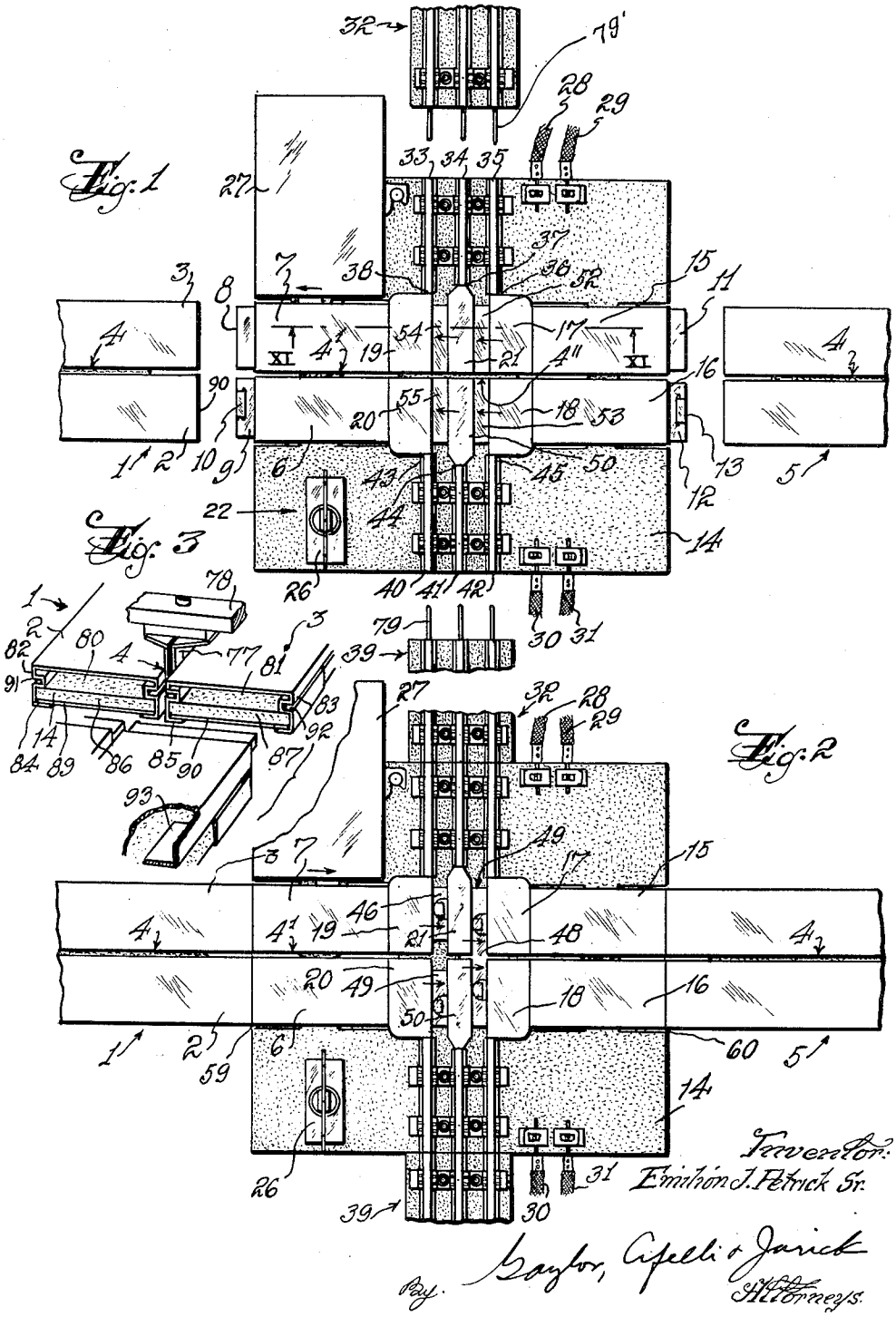
Aug. 27, 1957 E. J. PETRICK, SR 2,804,543

SCALE MODEL HIGHWAY-RAILROAD CROSSING

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Fig. 4

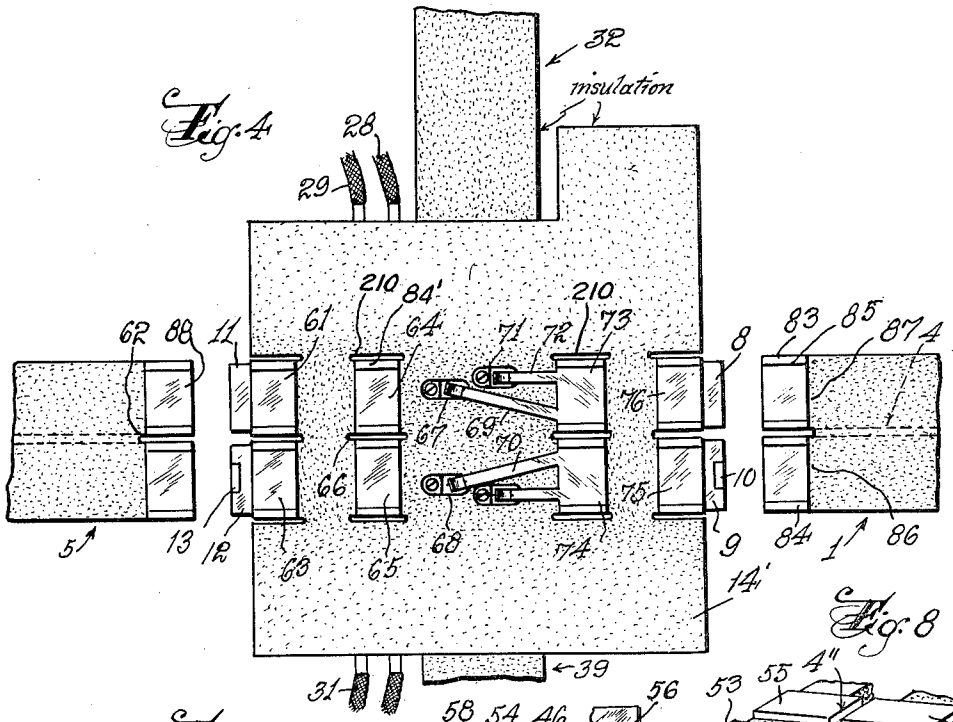


Fig. 8

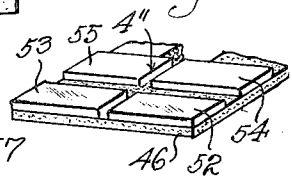
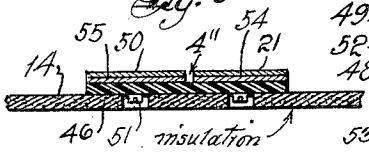


Fig. 6



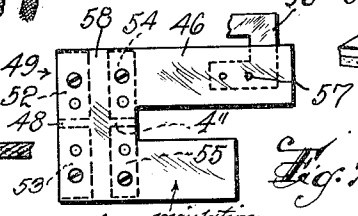
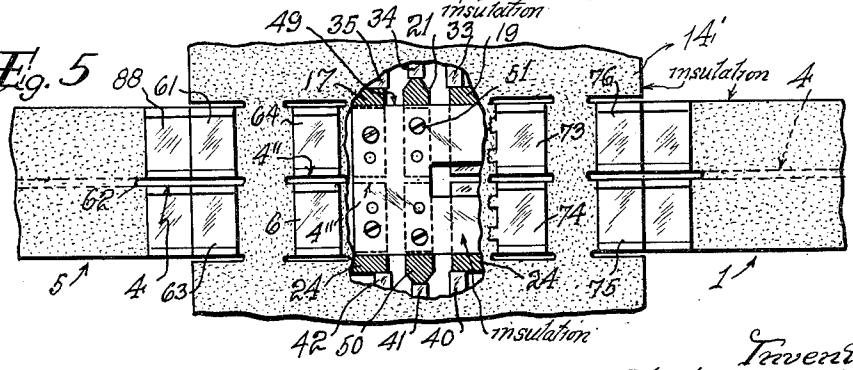


Fig. 7

Fig. 5



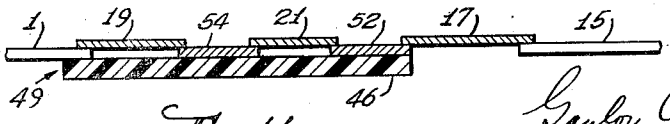


Fig. 11

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Fig. 9

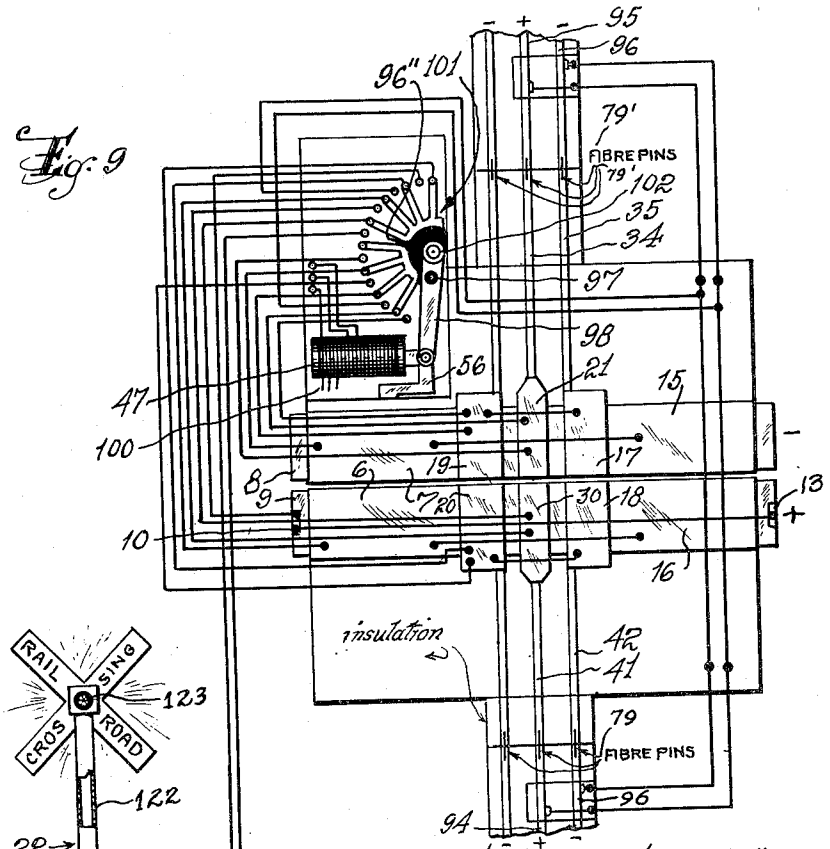
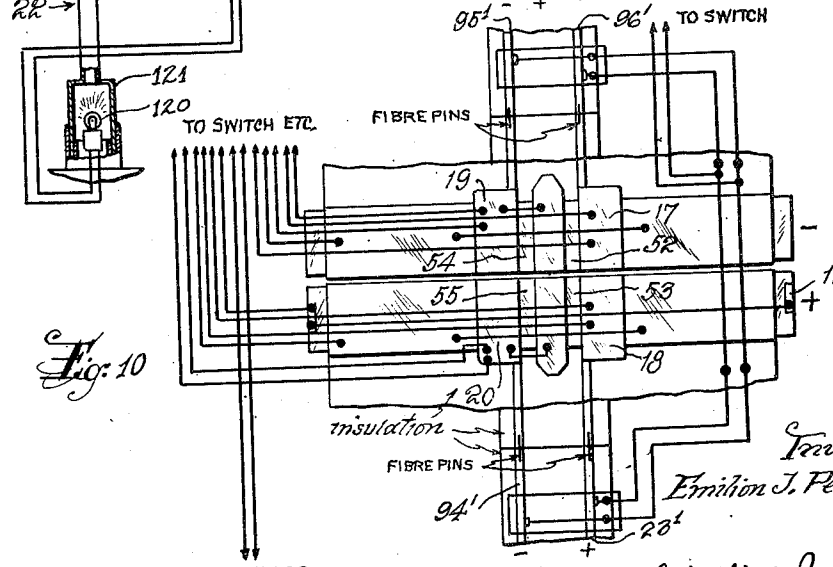


Fig. 10



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United States Patent Office 2,804,543 Patented Aug. 27, 1957

2,804,543

SCALE MODEL HIGHWAY-RAILROAD CROSSING

Emilion J. Petrick, Sr., Newark, N. J.

Application January 21, 1954, Serial No. 405,299

5 Claims. (Cl. 246—114)

This invention deals with a highway-railway crossing for scale model driven vehicles. More specifically, it provides a simple and effective means for the crossing of a conventional railroad track by a flat roadbed on which an automotive type vehicle is driven.

In Serial No. 402,629 filed on January 7, 1954, by Emilion J. Petrick, Sr., of which this application is a continuation-in-part, there is described a driven scale model automotive vehicle and road system employing a road made of a series of parallel plates between which a narrow, uniform air space is provided, in which space rides a downwardly directed, bi-pronged, flat guide means attached to the underside of a swiveling axle of the vehicle and serving to hold the vehicle on the road as it is driven by a centrally disposed friction driving wheel. This application provides a unique and valuable means for extending the scope of use of said scale model automotive system, by enabling the combining of the automotive system with a conventional scale model train system, thereby increasing greatly the interest and applicability of both systems.

The invention will be more readily understood by reference to the accompanying drawings in which a plan view of a preferred embodiment is depicted in Figure 1 in position to allow passage of automotive traffic, while Figure 2 shows a similar view with the system in position to allow passage of railroad traffic. Figure 3 is a perspective view of a road joint section (partially cut away) showing the guide means from the automotive vehicle riding thereon. A bottom view of the system shown in Figure 1 is illustrated in Figure 4, while Figure 5 is a fragmentary view of the matter shown in Figure 4 with the central portion cut away to expose parts disposed within the center of the road system. A bottom view of the switching plate is shown in Figure 7 and a cross-sectional view thereof is depicted in Figure 6. A perspective top view of a portion of this plate is illustrated in Figure 8. Figure 9 presents a diagrammatic plan view of the crossing with electrical connections for operating the switch plate and light, showing a 3-rail train track, while Figure 10 is a similar view showing a 2-rail train track. Similar numerals refer to similar parts in the various figures. Figure 11 is a fragmentary longitudinal sectional view on the line XI—XI of Figure 1, in the direction of the arrows.

Referring again to the drawings, numeral **1** represents a roadbed comprising a pair of flat parallel plates **2** and **3** (Figure 3) separated by air space **4** in which rides the flat guide means **77** attached to a swiveling axle **78** of the vehicle. Plates **2** and **3** are top portions of hollow enclosures **80** and **81**, respectively, having sides **82** and **83**, respectively, with overlapped lips **84** and **85** respectively, holding base portion ends **86** and **87** made of insulating fiber board, plastic sheet, or the like. Metal plates **61**, **63**, **64**, **73**, **74**, etc. (Figure 4) and **89** and **90** are soldered to lips **84**, **85**, etc. to facilitate better electrical contact. Inwardly directed lateral grooves **91** and **92** in sides **82**, **83**, etc. serve as vertical limiting means for base ends **86** and **87**, respectively, while inwardly directed lips **93** serve as limiting means and road load supports for the portions of the road bed further away from the ends of the base. Conductive projections **8** and **11** (Figure 1) extending from the hollow portions under plates **7** and **15**, respectively (such as portions **80** and **81** in Figure 3), serve as joint making means for joining plates **7**, etc. with plates **3**, etc. Insulating projections **9** and **12** are similar to **8** and **11** with the exception that they are made of insulating plastic to isolate electrically those particular portions. They are provided with conductive connections **10** and **13**, respectively for connection with other parts of the system to be explained later. Numerals **32** and **39** represent portions of a conventional railroad track having insulating fiber pins **79** for connection with tracks **33**, **34**, **35** and **40**, **41** and **42**, respectively mounted on base **14'**. Figure 2 shows the track and road portions all joined, ready for use.

Between permanently mounted metal strips **19** and **17** and **20** and **18**, are permanently mounted narrow metal strips **21** and **50**, respectively which are provided to serve as a continuation of middle rail portions **34** and **41**. Disposed immediately under these plates and above base **14'** is movable switching plate **49** (Figure 7) made of insulating sheet, on one end **48** of which are mounted metal plates **52**, **53**, **54** and **55** which serve as part of the roadbed when plate **49** is switched into highway-operating position. The other end **46** of plate **49** has attached to it arm **56** actuated by solenoid **47** which performs the switching operation by moving plate **49** to the right (in Figure 2) or left (in Figure 1), as shown by the arrows.

It will be noted that air space **4**, **4'**, **4''** is maintained as a continuous channel for accommodating guide **77** on the automotive vehicle. Lines **28**, **29**, **30** and **31** serve to feed current from a step down transformer to the system. Electrical connections **67**, **69**, **68**, **70**, **71**, **72**, etc. are provided for the circuits shown in Figures 9 and 10. It is apparent from the drawings that when double acting solenoid **47** moves arm **56** (Figure 9) to the right, plates **54**, **55**, **52** and **53** on switch plate **49** are moved as in Figure 2, so that plates **54** and **55** are slid underneath plates **21** and **50** respectively, while plates **52** and **53** are slid under plates **17** and **18** respectively and crossing light **22** is lighted as it faces the highway on stand **26**, and the crossing is in condition for the railroad train to cross. Conversely, when solenoid **47** moves arm **56** to the left, plates **54**, **55**, **52** and **53** on switching plate **49** move to the left as in Figure 1, placing the crossing in condition for highway traffic. Track portions and road portions are energized or de-energized during these operations, as will be set forth in greater detail.

As is apparent from Figure 9, double acting solenoid **47** which is actuated by a switch closing the first and second or second and third leads **100** (depending on the action desired), moves switch arm **98** which is swiveled and attached to switch **101** at **102**. Switch **101** also is connected to arm **98** at **97**, so that when arm **98** is moved to the right or left, switch **101** also is moved around swivel **102**, causing the switch contacts to move. It will be noted that contacts 1, 2, 3 and 4 (counting upwardly) of switch **101** are connected together as a unit separately insulated by insulator **96''** from contacts 5, 6, 7 and 8 which are connected together as a unit. There are fifteen circuit contacts to which the switch contacts may be connected. These circuit contacts are connected to the various plates, prongs, and rails as indicated, the connections being made at the bottom of base **14** (Figure 4) and wires (not shown in Figure 4, but shown in Figures 9–10).

Referring again to Figure 9, when the first two of the leads **100** of solenoid or coil **47** are closed, arm **98** is moved to the left and the switch contacts 1, 2 and 3 make contact with circuit contacts 2, 4 and 6 (counting up-

wardly) so that circuit contacts 2, 4 and 6 are connected together. Also, switch contacts 5, 6, 7 and 8 connect together circuit contacts 9, 11, 13 and 15. At the same time, solenoid **47** also moves arm **56** to the left in Figure 9 which moves to the left, switching plate **49** and puts into condition the crossing for highway traffic (as in Figure 1). The circuits also energize prong **10**, plates **6**, **20**, **55**, **50**, **53**, **18**, and **13**, which acquire current of one polarity from road sections **1** and **5**, and also energize plates **7**, **19**, **54**, **21**, **52**, **17** and **15** which acquire current of the opposite polarity. Railroad rails **34**, **35**, **41** and **42** are de-energized, so that a train riding on the railroad tracks **95** and **96** or **94** would be stopped. Crossing light **22** also would be de-energized. It will be noted that rails **94'**, **95'** and **96'**, and middle or third rails **94** and **95** (Fig. 9), are connected with rails **35** and **42**, and middle or third rails **34** and **41**, etc. by insulating fiber pins **79** and **79'** to allow electrical isolation of the crossing section of the railroad by the circuit shown. The railroad obtains its current from its own supply fed from a transformer.

When the last two of the leads **100** are connected together by a switch, solenoid **47** moves switch arm **98** to the right and current is fed, connecting circuit contacts 1, 3, 5 and 7 of switch **101**, also supplying current to plates **19** and **20**. Tracks **34**, **35**, **41** and **42** are energized and crossing light **22** is lighted. Circuit contacts 8, 10, 12 and 14 also are simultaneously connected together in switch **101**, and supplying current to plates **21** and **54**.

Simultaneously, solenoid **47** also moves arm **56** to the right causing switching plate **49** to be moved to the right as in Figure 2, enabling trains moving on the track in either direction to effect the crossing satisfactorily. At the same time, plates **6** and **16** are de-energized by cutting current flow therefrom, so that automotive vehicles moving toward the crossing on roadbeds **1** or **5** would be stopped before reaching the crossing.

A highway crossing employing a 2-rail railroad is illustrated in Figure 10. It is apparent from the figure that the wiring connections are the same as those depicted in Figure 9.

A crossing signal light **22** mounted on base **26** (Figure 1) is shown in greater detail in Figure 9. It will be noted that light bulb **120** encased in separable hollow base **121** shines the light through hollow support **122** to the top portion in which is inserted a red crystal or lens **123**.

As is apparent from Figures 6 and 8 stationary conductive plates or strips **54**, **55**, **21**, **50**, **17** and **18** have sides similar to **82**, **83**, etc. (Figure 3) which terminate with lips **84'** that project through slots **210**, etc. (Figure 4) and are bent over metal plates **64**, etc. and preferably soldered thereto. These plates **64**, etc. are employed for soldering on wires for the connections indicated in Figures 9 and 10.

I claim:

1. A scale model crossing for an electric railroad and an electric automotive vehicle road system, the latter comprising a series of a pair of electrically charged parallel plates disposed alongside each other substantially in the same plane, separated from each other by a uniform narrow air space and having a rigid sheet base disposed under said plates, adapted to serve as a mounting for said plates, the automotive vehicle being adapted to be driven on said plates with wheels straddling said air space, said vehicle having at least one horizontally swiveling axle and a vertically directed guide means centrally attached to the bottom of said axle and adapted to ride within said air space between said plates, said vehicle being driven by a motor contained therein and picking up power from said plates through conductive contact of said vehicle therewith, a pair of stationary conducting strips mounted over each of the adjacent ends of the pair of plates on each side of said crossing and separated by an air space as heretofore, the inner edges of said plates being flush with the inner edges of the outer railroad rails at the crossing, a pair of narrow stationary conductive strips centrally disposed between the latter set of stationary plates and also separated by a similar air space and serving as an extension of a third rail of the railroad, a switching plate mounted at the intersection under said stationary plates and movable in the direction of the automotive vehicle road, separate strips mounted on said switching plate to bridge the spaces between said stationary strips covering the ends of the road plates and the centrally disposed strip, when said switching plate is moved in one direction, and be rendered inoperative when said switching plate is moved in the other direction, said separate strips on said switching plate being correspondingly spaced in line with the parallel plates of the road system, means for moving said switching arm in either direction, insulating means for insulating a section of the railroad track on each side of the crossing from the rest of the railroad, electrical connecting means between the plates and the railroad, and electrical switching means co-acting with said electrical connecting means to de-energize a plate on each side of the crossing to stop automotive vehicles on the road simultaneously as the switching plate is moved to allow passage of railroad traffic, and simultaneously energize the insulated railroad sections, and to de-energize the said insulated railroad sections to stop railroad traffic and simultaneously energize said de-energized plate on each side of the crossing as the switching plate is moved to allow passage of automotive vehicles.

2. A scale model crossing according to claim 1 in which a crossing light is mounted facing the automotive vehicle road traffic, said light being inserted in the electrical circuit, connecting means in said circuit to energze said traffic light when said switching plate is moved to allow passage of railroad traffic, and disconnecting means in said circuit to deenergize said light when said switching plate is moved to allow passage of automotive vehicle traffic.

3. A toy comprising road sections and a grade crossover, with a railroad track having at least two rails, said road sections being formed of a series of electrically-charged plates disposed parallel to one another, lying in the same plane and separated by a uniform narrow air space to receive vertically directed guide means attached to the bottom of a toy road vehicle, the adjacent ends of said plates terminating at the inner edges of the outermost rails so as to form guides for the flanges of the wheels of a toy railroad vehicle when using said crossover and bridging strips movable as a unit from positions clearing said crossover for railroad wheel flanges, when the crossover is set for rail traffic to positions bridging the gaps between the adjacent ends of said parallel plates so as to carry said road vehicle, when said crossover is set for that kind of traffic.

4. The invention as defined in claim 3, in which a double acting solenoid is provided for operating said switching strips by remote control.

5. The invention as defined in claim 3 wherein a signal light is disposed adjacent said crossover and so electrically connected that it is energized when the switching strips are set for rail traffic so as to show a warning signal to road traffic and deenergized when said plates are set in the opposite position.

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