Disclosed is a railway switching system for switching a pair of secondary tracks between a pair of primary tracks in a fast, easy, convenient and inexpensive manner. The railway switching system comprises a switch unit positioned between a pair of secondary tracks, a covering unit disposed on said switch unit, the covering unit capable of covering the switch unit; and a pair of connecting elements coupling the pair of secondary tracks and the covering unit, and operably contacting the switch unit such that the pair of connecting elements, the covering unit and the pair of secondary tracks configure to form a conjointly movable unit, wherein the conjointly movable unit is capable of moving in a direction enabling said railway switching system to switch the pair of secondary tracks between the pair of primary tracks. The railway switching system reduces the need for heavy machinery equipment and extra crews during installation.
RAILWAY SWITCHING SYSTEM

FIELD OF THE INVENTION

[0001] The present invention relates to railway switching devices, and, more particularly to a hydraulically operated railway switching system in railroad applications.

BACKGROUND OF THE INVENTION

[0002] Railway switches have been in use since long for displacing/switching railway switch points, i.e., for displacing/switching movable points of railway tracks, and then locking the railway switch points at selected positions, thereby diverting a railway vehicle (e.g., a train) to a desired route, when the train is passing through such a railway switch. Various configurations and arrangements of railway switches are available universally that aid in diverting a train to a desired route, when the train passes through such railway switches.

[0003] However, the existing railway switches have a design that necessitates the actuation components of the railway switches to be hard mounted to railway tracks through a series of mechanical components. During the switching operation, these mechanical components transfer force from the actuation components of the railway switches to the railway switch points and in doing so, the railway tracks pass along vibration and side loading from the railway tracks back into the railway switches. Such vibrations and side loading coupled with prolonged use, thermal cycling, and other wear and tear factors are harmful to the railway switches, which demands frequent site surveys for routine maintenance and adjustment of railway switches, thereby resulting in expensive maintenance and adjustment costs. Moreover, the existing railway switches have a complex design that involves heavy equipments and extra crews and time consuming installation of the different components of the railway switches.

[0004] Furthermore, most of the existing railway switches are integrated within a railway tie disposed between the railway tracks. Thus, maintenance and other operations like bending, cutting, welding, hammering, twisting, and the like, on the railway tie cannot be performed independently of the railway switch. Also, the existing railway switches employ mechanical locking mechanisms that do not provide flexible locking positions and flexible throw lengths.

[0005] U.S. Patent Publication Number 20050178929 discloses a switch machine for a railway switch provided with two switch points, including two operating rods extending from the housing to the switch points; a shifting body within the housing, capable of sliding relative to the housing to simultaneously displace the operating rods; an engagement device within the housing for selectively engaging the operating rods to the housing at the two end stroke points; and a pivoting connector between each operating rod and its associated switch point. The railway switch of this publication has a design that suffers harmful railway track vibrations, thereby requiring routine maintenance and adjustment of railway switches, and costs associated therewith.

[0006] U.S. Pat. No. 4,953,814 discloses a railway switch comprising a frog having a movable main and auxiliary point. The main and the auxiliary points are formed by using thick-web standard rail sections and asymmetric tongue profiles of smaller height as compared with the thick-web standard rail sections which are arranged as outer wing rails. The difference in height between the height of the main and auxiliary points and the height of the outer wing rails is greater than the height of the rail feet of the main and auxiliary points. The railway switch of this patent involves complex configuration and suffers harmful railway track vibrations, thereby requiring routine maintenance and adjustment of railway switches, and associated costs.

[0007] The above-mentioned railway switches and several others in the prior art do not provide for a railway switch that has a design and operational capability to overcome the above-mentioned drawbacks. Accordingly, what is needed is a railway switch that provides a switching mechanism operating in a fast, easy, convenient, reliable, inexpensive, and power efficient manner. Also, what is needed is a railway switch that can be easily installed, and that does not have frequent maintenance and/or adjustment requirements.

SUMMARY OF THE INVENTION

[0008] In view of the foregoing disadvantages inherent in the prior art, the general purpose of the present invention is to provide a railway switching system, include all the advantages of the prior art, and to overcome the drawbacks inherent therein.

[0009] In one aspect, the present invention provides a railway switching system. The railway switching system comprises: a switch unit positioned between a pair of secondary tracks; a covering unit disposed on the switch unit, the covering unit capable of covering the switch unit; and a pair of connecting elements coupling the pair of secondary tracks and the covering unit, and operably contacting the switch unit, such that, the pair of connecting elements, the covering unit and the pair of secondary tracks configure to form a conjointly movable unit. The conjointly movable unit is capable of moving in a direction enabling the railway switching system to switch the pair of secondary tracks between a pair of primary tracks.

[0010] In another aspect, the present invention provides, railway switching system, comprising: a switch unit positioned between a pair of secondary tracks, the switch unit having a pair of hydraulically operated push rods configured at opposite ends of said switch unit; a covering unit disposed on the switch unit, the covering unit capable of covering the switch unit; and a pair of connecting elements having a central portion having a first end and a second end, the central portion coupling opposite ends of the covering unit, a first portion extending from the first end of the central portion, the first portion coupling the secondary tracks, a second portion extending from a portion of the second end of the central portion in a direction opposite to extension of the first portion, the second portion operably contacting the hydraulically operated push rods, wherein the pair of connecting elements, the covering unit and the pair of secondary tracks configure to form a conjointly movable unit, such that, when one hydraulically operated push rod applies a throw force on the second portion of one connecting element in a direction, the conjointly movable unit moves in the direction, thereby switching the pair of secondary tracks between a pair of primary tracks.

[0011] In yet another aspect, the present invention provides an in-tie railway switching system. The in-tie railway switching system comprises: a switch unit positioned between a pair of secondary tracks, the switch unit having a pair of hydraulically operated push rods configured at opposite ends of the switch unit, a covering unit having a top wall, a pair of side
walls extending substantially perpendicular from two sides of the top wall, and a pair of abutting flanges extending out from opposite ends of the top wall, the covering unit capable of covering the switch unit; and a pair of connecting elements having a central portion having a first end and a second end, the central portion coupling the pair of abutting flanges of the covering unit, a first portion extending substantially perpendicular from the first end of the central portion, the first portion coupling the secondary tracks, and a second portion extending substantially perpendicular from the second end of the central portion, in a direction opposite to extension of the first portion, the second portion operably contacting the hydraulically operated push rods; wherein the pair of connecting elements, the covering unit and the pair of secondary tracks configure to form a conjointly movable unit, such that, when one hydraulically operated push rod applies a throw force on the second portion of one of the connecting element in a direction, the conjointly movable unit moves in the direction, thereby switching the pair of secondary tracks between a pair of primary tracks.

[0012] These together with other aspects of the present invention, along with the various features of novelty that characterize the invention, are pointed out with particularity in the claims annexed hereto and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and the specific objects attained by its uses, reference should be had to the accompanying drawings and descriptive matter in which there are illustrated exemplary embodiments of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The advantages and features of the present invention will become better understood with reference to the following more detailed description and claims taken in conjunction with the accompanying drawings, wherein like elements are identified with like symbols, and in which:

[0014] FIG. 1 is an exploded component view of a railway switching system 200 along with a pair of primary tracks 20, 40 and a pair of secondary tracks 30, 50 disposed on a railway tie 10, according to an exemplary embodiment of the present invention;

[0015] FIGS. 2A and 2B illustrate a perspective view and a side view of a switch unit 60 of the railway switching system 200, according to an exemplary embodiment of the present invention;

[0016] FIG. 3A illustrates a perspective view of a covering unit 80 of the railway switching system 200, according to an exemplary embodiment of the present invention;

[0017] FIG. 3B is a side plan view of the covering unit 80, according to an exemplary embodiment of the present invention;

[0018] FIGS. 4A and 4B illustrate perspective views of connecting elements 70, 90 of the railway switching system 200, according to an exemplary embodiment of the present invention;

[0019] FIG. 5A is a schematic view illustrating the coupling of the connecting element 70 with the secondary track 30 and the covering unit 80, according to an exemplary embodiment of the present invention;

[0020] FIG. 5B is a projected detailed view of a configuration illustrated in FIG. 5A;

[0021] FIG. 6 illustrates the configurational coupling of the connecting elements, 70, 90, the switch unit 60, the secondary tracks 30, 50, the primary tracks 20, 40 without the covering unit 80 disposed on the switch unit 60, according to an exemplary embodiment of the present invention;

[0022] FIG. 7 is a schematic front sectional view of the railway switching system 200 disposed within a cutout space 12 of the railway tie 10, between the pair of primary tracks 20, 40 and the pair of secondary tracks 30, 50, according to another exemplary embodiment of the present invention;

[0023] FIG. 8 is a schematic top view of the railway switching system 200, disposed on the railway tie 10 and between the pair of primary tracks 20, 40 and the pair of secondary tracks 30, 50, according to another exemplary embodiment of the present invention.

[0024] Like reference numerals refer to like parts throughout several views of the drawings.

DETAILED DESCRIPTION OF THE INVENTION

[0025] The exemplary embodiments described herein detail for illustrative purposes and are subject to many variations in structure and design. It should be emphasized, however, that the present invention is not limited to a particular railway switching system as shown and described. Rather, the principles of the present invention may be used with a variety of configurations and structural arrangements, e.g., for aesthetics, structural purposes, and/or for simplicity in assembling and disassembling. It is understood that various omissions, substitutions of equivalents are contemplated as circumstances may suggest or render expedient, but is intended to cover the application or implementation without departing from the spirit or scope of the claims of the present invention.

[0026] The terms “a” and “an” as used herein do not denote a limitation of quantity, but rather denote the presence of at least one of the referenced item and the terms “first”, “second” and the like, herein do not denote any order, quantity, or importance, but rather are used to distinguish one element from another.

[0027] The present invention provides a railway switching system for switching a pair of secondary tracks between a pair of primary tracks in a fast, easy, convenient, reliable, inexpensive, and power efficient manner, that is capable of substantially isolating the railway switching system from vibrations during operation. The present disclosure is capable of allowing for degrees of freedom in all planes but one, thereby enabling the switching system to operate nearly independently from harmful railway track vibrations associated with conventional switch designs. The configuration of the railway switching system of the present invention eliminates the need for frequent site surveys for routine maintenance and/or adjustment of the railway switching system, thereby allowing for a substantive up front cost saving in terms of maintenance and adjustment costs. Also, the railway switching system of the present invention may be quickly and easily installed, thereby reducing the need for heavy machinery equipment and extra crews during installation.

[0028] Referring to FIGS. 1 through to 8, illustrated is a railway switching system 200 [hereinafter referred to as 'switching system 200']. In one embodiment, the switching system 200 comprises a switch unit 60, a covering unit 80, a pair of connecting elements 70, 90 and a power unit 100. The switch unit 60 of the switching system 200 is configured to be disposed on a railway tie 10 [hereinafter referred to as 'tie 10'], between a pair of secondary tracks 30, 50 and a pair of primary tracks 20, 40. The tie 10 has a top surface 14 on which lower flanges 24, 44 of the primary tracks 20, 40, and second
ends 34, 54 of the secondary tracks 30, 50 are mounted (see FIG. 1). The second ends 34, 54 of the secondary tracks 30, 50 are capable of moving horizontally along the top surface 14 of the tie 10, when operated using the switching system 200 of the present invention. The primary tracks 20, 40 are configured in a manner, such that, the upper flanges 22, 42 of the primary tracks 20, 40 may contact at least a portion of the first ends 32, 52 of the secondary tracks 30, 50, and the lower flanges 24, 44 may contact at least a portion of the second ends 34, 54 of the secondary tracks 30, 50, as shown in FIG. 1. The mounting of the upper flanges 24, 44 of the primary tracks 20, 40 on the tie 10 may be achieved using known mounting means including, but not limited to, bolting, clamping and riveting. In an embodiment, the tie 10 may be a steel tie having a weight of about 300 pounds (lbs).

[0029] Now, referring to FIGS. 2A and 2B, illustrated is the switch unit 60 of the switching system 200, according to one embodiment of the present invention. The switch unit 60 comprises a linear transducer unit 62 coupled to cylinders 64, 66 on opposite sides of the linear transducer 62. The pair of cylinders 64, 66 house single acting push rods 65, 67, such that, during operation of the switching system 200, the push rods 65, 67 protrude in and out of the cylinders 64, 66. The linear transducer unit 62, the cylinders 64, 66 with the push rods 65, 67 housed therein are communicatively coupled to each other, and the linear transducer unit 62 may be configured to have programmable logical control capable of storing programmable instructions for enabling the push rods 65, 67 to apply throw force on the connecting elements 70, 90. In one embodiment, the push rods 65, 67 are chrome plated rods. Additionally, the switch unit 60 may be hydraulically operated, such that, the push rods 65, 67 may be moved using hydraulic pressure of a fluid. The linear transducer unit 62 further has a plurality of electrical channels 69 capable of providing electrical power to the switch unit 60 and further fluid communication channels 68 capable of transferring the fluid to the cylinders 64, 66 of the switch unit 60.

[0030] FIGS. 3A and 3B illustrate the perspective view and the side plan view of the covering unit 80 of the switching system 200. In one embodiment of the present invention, the covering unit 80 has a top wall 82, a pair of side walls 84 and a pair of abutting flanges 86, 88. The side walls 84 extends substantially perpendicularly from two sides of the top wall 82 and the abutting flanges 86, 88 extend out from opposite ends of the top wall 82. The abutting flanges 86, 88 have a plurality of holes 87 to receive coupling means including, but not limited to, bolts and rivets.

[0031] FIGS. 4A & 4B illustrate the connecting elements 70, 90 according to one embodiment of the present invention. The connecting elements 70, 90 have central portions 72, 92 having first ends 73, 93, second ends 74, 94 and a plurality of holes 77, 97. A first portion 75 extends at an inclination up to an edge from the first end 73 of the central portion 72 of the connecting element 70 and thereafter extends perpendicularly to the central portion 70 and similarly, first portion 95 extends at an inclination up to an edge from the first end 93 of the central portion 92 of the connecting element 90 and thereafter extends perpendicularly to the central portion 92. A second portion 76 extends substantially perpendicularly from a portion of the second end 74 of the central portion 72 of the connecting element 70, in a direction opposite to the direction of extension of the first portion 75. The second portion 76 is configured to operably contact the push rod 65 (See FIGS. 2A and 2B) during operation. The plurality of holes 77, 97 are capable of receiving coupling means including, but not limited to, bolts and rivets. And similarly, a second portion 96 extends substantially perpendicularly from a portion of the second end 94 of the central portion 92 of the connecting element 90, in a direction opposite to the direction of extension of the first portion 95. The second portion 96 is configured to operably contact the push rod 67 (See FIGS. 2A and 2B) during operation.

[0032] The switching unit 200 further comprises a power unit 100 (See FIG. 1) configured to provide electric power the switch unit 60. The power unit 100 comprises a pump (not shown) that stores a fluid for the hydraulic operation of the push rod 65, 67 and in turn for the operation of the switch unit 60. A driving unit (not shown) having an electric motor is also a part of the power unit 100, the driving unit capable of driving the fluid from the pump to the switch unit. The power unit 100 further comprises: a plurality of hydraulic sensors, the hydraulic sensors capable of measuring the position of the push rods 65, 67 over the full operational length of the push rods 65, 67 within the hydraulic cylinder 64, 66 during operation; valve blocks (not shown) coupled to an output (from where the fluid is transmitted to the cylinders 64, 66) of the pump capable of preventing a reverse flow of the fluid through the pump during operation; and a plurality of fluid communication channels 68 coupled to the pump on one end and the switch unit 60 on the other end, the fluid communication channels capable of transferring the fluid pressure of the fluid from the pump to the cylinders 64, 66 of the switch unit 60.

[0033] In one embodiment, the switching system 200 is positioned within a cutout space 12 (See FIG. 5A) of the tie 10. The configurational coupling of the primary track 20, the secondary track 30, the tie 10, the connecting element 70, the switch unit 60 with the push rod 65 and the covering unit 80 is illustrated in FIGS. 5A and 5B. As shown, the primary track 20 is seated on the tie 10. The connecting element 70 is coupled to the secondary track 30 at the first portion 75, such that, the inclination of the first portion 75 is seated on the second end 34 of the secondary track 30. The covering unit 80 is mounted on the switch unit 60 in a manner, such that, the abutting flange 86 of the covering unit 80 is positioned over a portion of the central portion 72 of the connecting element 70 and the abutting flange 86 with the plurality of holes 87 is disposed on the plurality of holes 77 of the central portion 72 and coupled together using coupling means, such as, bolts, clamps, rivets, screws, and the like. The side walls 84 of the covering unit 80 covers the switch unit 60 from the sides.

[0034] In a manner similar to as described above, the connecting element 90 is coupled to the secondary track 50 at the first portion 95 and the abutting flange 88 of the covering unit 80 is coupled to the central portion 92 of the connecting element 90 through the plurality of holes 89 and 97, such that, the pair of secondary tracks 30, 50, the pair of connecting elements 70, 90 and the covering unit 80 form a conjointly movable unit. The complete configurational coupling of all the aforementioned components is further illustrated with more clarity and detail in FIG. 6, which illustrates a top perspective view of the railway switching system 200 working within a cutout space 12 of the tie 10, between a pair of primary tracks 20, 40 and without the covering unit 80 disposed on the switch unit 60. And more specifically in FIGS. 7 and 8, illustrating a front sectional view and top view of the switching system 200 working within the cutout space 12 of the tie 10 and the covering unit 80 disposed on the switch unit 60.
Operationally, considering an exemplary situation, wherein, the secondary track 30 is to be switched/displaced/moved towards the primary track 20, programmable instructions are received and stored in the linear transducer unit 62 of the switch unit 60. The driving unit of the power unit 100 drives the fluid from the pump to the cylinder 64 to hydraulically operate the push rods 65, thereby, enabling the push rod 65 to apply a throw force on the second portion 76 of the connecting element 70. As the connecting element 70 is coupled to the secondary track 30 at the first portion 75, the throw force applied by the push rod 65 on the connecting element 70 is transferred to the secondary track 30 enabling it to slide along the top face 14 of the tie 10, thereby, causing it to switch/displace/move towards the primary track 20. Accordingly, the conjointly movable unit configured by the pair of secondary tracks 30, 50, the pair of connecting elements 70, 90 and the covering unit 80, switches/displaces/moves in the direction towards the primary track 20 and finally depending upon the programmable throw force programmed in the linear transducer unit 62, the secondary track 30 will be switched/displaced/moved towards the primary track 40. In an embodiment of the present invention, a user operating the railway switching system 200 may give programmable instructions for variable throw force ranging between 0 to 5000 lbs, by which the secondary tracks are pushed towards the primary tracks. Additionally, the user may give programmable instructions for variable lock force ranging between 0 to 25000 lbs to hold the secondary tracks in place after they reach a position. The user can further give programmable instructions for the variable throw speed ranging between 4 to 8 seconds for programming the time to complete a full throw i.e. completely switching/displacing/moving a secondary track to a primary track.

The foregoing descriptions of specific embodiments of the present invention have been presented for purposes of illustration and description. They are not intended to be exhaustive or to limit the invention to the precise forms disclosed, and, obviously, many modifications and variations are possible in light of the above teachings. The embodiments were chosen and described in order to best explain the principles of the present invention and its practical application, to thereby enable persons skilled in the art to best utilize the invention and its various embodiments with various modifications as are suited to the particular use contemplated. It is understood that various omissions, substitutions of equivalents are contemplated as circumstance may suggest or render expedient, but is intended to cover the application or implementation without departing from the spirit or scope of the claims of the present invention.

1. A railway switching system, comprising: a switch unit positioned between a pair of secondary tracks; a covering unit disposed on said switch unit, said covering unit capable of covering said switch unit; and a pair of connecting elements coupling said pair of secondary tracks and said covering unit, and operably contacting said switch unit such that said pair of connecting elements, said covering unit and said pair of secondary tracks configure to form a conjointly movable unit, wherein said conjointly movable unit is capable of moving in a direction enabling said railway switching system to switch said pair of secondary tracks between a pair of primary tracks.

2. The railway switching system as claimed in claim 1, further comprising a power unit for powering said switch unit, said power unit having a pump capable of storing a fluid, a driving unit having an electric motor capable of driving the pump, at least one hydraulic sensor capable of measuring the movement of said conjointly movable unit; at least one valve block coupled to an output of the pump, the valve block capable of preventing a reverse flow of the fluid through the pump during operation, a plurality of fluid communication channels capable of transforming a fluid pressure of the fluid from said pump to said switch unit; and a plurality of electrical channels capable of providing electrical power to said switch unit.

3. The railway switching system as claimed in claim 1, wherein said switch unit comprises a pair of cylinders configured to house a pair of push rods; and a linear transducer unit having a programmable logical control capable of receiving and storing programmable instructions for enabling said push rod to apply a throw force on one said connecting element.

4. The railway switching system as claimed in claim 1, wherein said pair of primary tracks and said pair of secondary tracks is seated on a top surface of a railway tie.

5. The railway switching system as claimed in claim 4, wherein said switch unit is placed within a cutout space in the railway tie.

6. The railway switching system as claimed in claim 3, wherein said connecting element comprises a central portion having a first end and a second end, said central portion coupling opposite ends of said covering unit, a first portion extending substantially perpendicular from said first end of said central portion, said first portion coupling said secondary tracks, and a second portion extending substantially perpendicular from a portion of said second end of said central portion, in a direction opposite to extension of said first portion, said second portion operably contacting said push rods.

7. The railway switching system as claimed in claim 1, wherein said covering unit has a top wall, a pair of side walls extending substantially perpendicular from two sides of said top wall, and a pair of abutting flanges extending out from opposite ends of said top wall.

8. A railway switching system, comprising: a switch unit positioned between a pair of secondary tracks, said switch unit having a pair of hydraulically operated push rods configured at opposite ends of said switch unit; a covering unit disposed on said switch unit, said covering unit capable of covering said switch unit; and a pair of connecting elements having a central portion having a first end and a second end, said central portion coupling opposite ends of said covering unit, a first portion extending from said first end of said central portion, said first portion coupling said secondary tracks,
a second portion extending from a portion of said second end of said central portion in a direction opposite to extension of said first portion, said second portion operably contacting said hydraulically operated push rods, and

wherein said pair of connecting elements, said covering unit and said pair of secondary tracks configure to form a conjointly movable unit, such that, when one said hydraulically operated push rod applies a throw force on said second portion of one said connecting element in a direction, said conjointly movable unit moves in said direction, thereby switching said pair of secondary tracks between a pair of primary tracks.

9. The railway switching system as claimed in claim 8, further comprising a power unit for powering said switch unit, said power unit having

a pump capable of storing a fluid,
a driving unit having an electric motor capable of driving the pump,

at least one hydraulic sensor capable of measuring the movement of said conjointly movable unit;
at least one valve block coupled to an output of the pump, the valve block capable of preventing a reverse flow of the fluid through the pump during operation;
a plurality of fluid communication channels capable of transforming a fluid pressure of the fluid from said pump to said switch unit; and

a plurality of electrical channels capable of providing electrical power to said switch unit.

10. The railway switching system as claimed in claim 8, wherein said switch unit comprises a linear transducer unit having a programmable logical control capable of storing programmable instructions for enabling said push rod to apply said throw force.

11. The railway switching system as claimed in claim 10, wherein said switch unit further comprises a pair of cylinders configured to house said pair of push rods.

12. The railway switching system as claimed in claim 8, wherein said push rods are chrome plated rods.

13. The railway switching system as claimed in claim 8, wherein said pair of primary tracks and said pair of secondary tracks is seated on a top surface of a railway tie.

14. The railway switching system as claimed in claim 13, wherein said switch unit is placed within a cutout space in the railway tie.

15. An in-tie railway switching system, comprising:

a switch unit positioned between a pair of secondary tracks, said switch unit having a pair of hydraulically operated push rods configured at opposite ends of said switch unit;
a covering unit having

a top wall,
a pair of side walls extending substantially perpendicular from two sides of said top wall, and

a pair of abutting flanges extending out from opposite ends of said top wall, said covering unit capable of covering said switch unit; and

a pair of connecting elements having

a central portion having a first end and a second end, said central portion coupling said pair of abutting flanges of said covering unit,
a first portion extending substantially perpendicular from said first end of said central portion, said first portion coupling said secondary tracks, and

a second portion extending substantially perpendicular from said second end of said central portion, in a direction opposite to extension of said first portion, said second portion operably contacting said hydraulically operated push rods;

wherein said pair of connecting elements, said covering unit and said pair of secondary tracks configure to form a conjointly movable unit, such that, when one said hydraulically operated push rod applies a throw force on said second portion of one said connecting element in a direction, said conjointly movable unit moves in said direction, thereby switching said pair of secondary tracks between a pair of primary tracks.

16. The in-tie railway switching system as claimed in claim 15, further comprising a power unit for powering said switch unit, said power unit having

a pump capable of storing a fluid,
a driving unit having an electric motor capable of driving the pump,

at least one hydraulic sensor capable of measuring the movement of said conjointly movable unit;
at least one valve block coupled to an output of the pump, the valve block capable of preventing a reverse flow of the fluid through the pump during operation;
a plurality of fluid communication channels capable of transforming a fluid pressure of the fluid from said pump to said switch unit; and

a plurality of electrical channels capable of providing electrical power to said switch unit.

17. The in-tie railway switching system as claimed in claim 15, wherein said pair of primary tracks and said pair of secondary tracks is seated on a top surface of a railway tie.

18. The in-tie railway switching system as claimed in claim 15, wherein said switch unit comprises a linear transducer unit having a programmable logical control capable of storing programmable instructions for enabling said push rod to apply said throw force.

19. The in-tie railway switching system as claimed in claim 18, wherein said switch unit further comprises a pair of cylinders configured to house said pair of push rods.

20. The in-tie railway switching system as claimed in claim 15, wherein said push rods are chrome plated rods.