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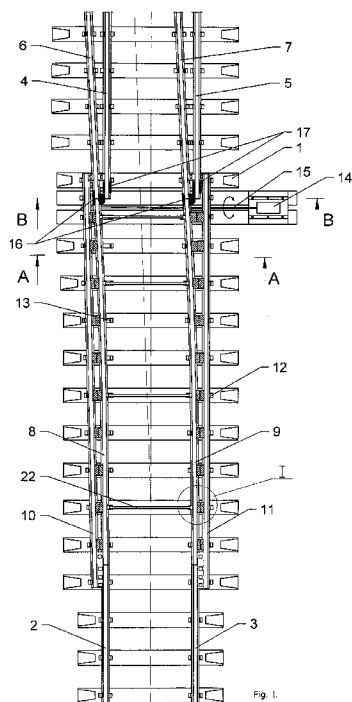
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- (72) Inventor; and
(71) Applicant: MAISURADZE, Temur [GE/GE]; Apt. 139, Building 10, 1-th Micr-District, Mukhiani, Tbilisi, 0172 (GE).

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(54) Title: TRACK SWITCH



(57) Abstract: A track switch that comprises track rails of basic (2), (3), straight, (4), (5) and lateral (6), (7) directions fastened on a slab track (1); sliding switch rails (8), (9) and point rails (10), (11) that are rigidly fastened to the slab track (1) by means of mounting means (12). The point rails and switch rails form points. The track switch comprises also a shift mechanism with a drive (14) and an axis (15), whereto sliding locks (16), (17) are connected. The point rails (10), (11) and the switch rails (8), (9) are connected with each other by means of units. Each of the units is a guide (18) that is rigidly fastened to the point rail, a wedge (19) that is rigidly fastened to the switch rail (8), (9), a cleat wedge (20) placed in the guides that is capable of moving longitudinally and fastened with its both ends to point rods (21) of the wedge (see figures 1 and 4). The sliding wedges (20) are connected to each other by means of point rods (21), the last of the point rods being connected with the axis of the shift mechanism that is capable of rotating or moving longitudinally, and is set into motion by a shift drive mechanism. The sliding switch rails (8), (9) are connected to each other by means of spacing rods (22).



Description

Track Switch

The present invention relates to railway construction industry, and more particularly to constructions that ensure joining and crossing of railway tracks.

Track switches [1] are known that comprise frogs with movable tongues, and a pair of points placed on baseplates that are provided with curvilinear and straight point rails and are set into motion by means of point operating gears between main and lateral tracks.

Also known is a track switch [2] comprising a pair of points fastened on a slab track that are linked to the rails of main and lateral tracks; lock pins of a rail; a reverse gear with a drive and an axis disposed between swing rails of traction and means for their motion.

Movable peaky elements (contact tongues) of the conventional track switches are relatively less strong against external influences because they are subjected to intense wear that leads to limiting the speed of a rolling stock. The construction is not protected from intrusion of solid materials, snow, or ice within the spacing's between movable and immobile elements, which leads to incapacitation of a track switch.

As concerns movable non-peaky elements, they are stubborn and unstable, and are inadmissible for use at higher speeds. Therefore, such elements are used only on in-house tracks.

The technical effect of the present invention is improved durability and reliability of a track switch as well as higher speed of a rolling stock.

The technical effect is achieved by that each point of a track switch is made in the form of point and swing rails connected with one another by means of some units, wherein each unit comprises a guide rigidly fastened to the point rail; a sliding wedge placed in the guide that is capable of moving in longitudinal direction and fastened with both ends to point rods, by means of which the mentioned sliding wedges are capable of moving in longitudinal direction between the wedges rigidly fastened to a rail and guides that are rigidly fastened to the point rail. The swing rails are joined by means of spacing rods. The wedges are connected to each other by means of point rods, the last point rod being connected to an axis laid under the rails and capable of rotating or moving longitudinally and, in turn, being connected with shift mechanism and movable locks.

The track switch according to the present invention is illustrated in four figures, wherein:

Fig. 1 depicts the top view of the track switch;

Fig. 2 illustrates the cross section A-A of that shown in fig.1;

Fig. 3 illustrates the cross section B-B of that shown in fig.1;

Fig.4 depicts the top view of a unit that joins the point rail with the swing rail.

The track switch shown in figures 1 to 3 comprises track rails of basic 2, 3, straight 4, 5 and lateral directions that are mounted on a slab track, sliding point rails 8, 9 and switch rails 10, 11 rigidly mounted on the slab track 1 by means of a mounting means 12. The point rails and switch rails form points. The point rails of the track switch are rigidly fastened with their one end to the ends of basic direction rails 2, 3, and with their another ends – to the ends of straight 4, 5 and lateral 6, 7 direction rails, forming an integrated rigid frame. The switch rails 8, 9 of the track switch are rigidly fastened with their one ends to the point rails and are coupled with the basic direction rails 2, 3, and another ends are capable of moving between the point rails on restrainers 13 having sliding surface (made, for example, of fluorine plastic or similar composite material) and fastened on the slab track 1 for ensuring fixation of the switch rails in extreme points. The track switch comprises also a shift mechanism with drive 14 and axis 15 capable of being rotated and moved in horizontal direction, whereto movable locks 16, 17 are connected that are disposed in places of joining the switch rails 8, 9 with straight 4, 5 and lateral 6, 7 direction tracks for ensuring the fixation of the switch rails. In addition, the point rails 10, 11 and switch rails 8, 9 are connected to each other by means of units (see fig. 4). Each unit comprises a guide 18 rigidly fastened to the point rail, a wedge 19 rigidly fastened to the switch rail 8, 9, sliding cleat wedge 20 placed in the guide and capable of moving longitudinally, supported on a fixed wedge and fastened with both ends to the point rods 21 (see figures 1 and 4). The cleat wedges 20 are connected to each other by means of point rods, and the last point rod in points of arrangement of locks is connected to the axis 15 of the shift mechanism being capable of rotating or moving in horizontal direction, set into motion by the switch drive 14. The sliding switch rails 8, 9 are connected to each other by means of **spacing rods 22**.

The device operates in the following manner: in order to shift a rolling stock from basic track 2, 3 to the lateral track 6, 7, the axis 15 moves the locks 16 by the drive 14 until the switch rails have been disconnected from the straight track 4, 5 (or vice versa) (see figures 1 and 3). As soon as the axis is set into the action, the point rods 21 start operating which, in turn, leads to the motion of the sliding cleat

wedges 20, and, accordingly, to the production of a spacing force. When the cleat wedge 20 between the switch rail 9 and the fixed point rail 11, acting with the spacing force with the aid of rods, presses on the sliding switch rail 8, the cleat wedge is synchronously disengaged between this sliding switch rail 8 and the fixed point rail 10, whereby it acts just as a support for the switch rail 8 on the point rail 10 (see figures 1, 2, and 4). The sliding switch rails 8, 9 via spacing forces produced between the wedged and by the point rods 22 are synchronously moved on the restrainers 13 having sliding surfaces and are fixed in the extreme points. Next, the locks 17 disposed close to the lateral direction rails 6, 7, which are rigidly fastened to the fixed point rails 10 and 11, lock the switch rails 8, 9 being radiused as required. In this position, the switch rails are rigidly fixed in horizontal and vertical planes.

Shifting from the lateral track to the basic one is accomplished in inversed order.

The present invention ensures reliable operation of a switch track and reduces wearing of its component parts, excludes accidental intrusion of external items in the switch construction, and the stable fixation of the point improves the motion safety, ensures rolling stock safety and motion thereof at a higher speed.

Claims

A track switch that comprises

a pair of points with sliding switch rails that is mounted on a slab track and connected with rails of basic, straight and lateral tracks;

rail restrainers;

a shift mechanism with a drive and an axis;

rods that are laid between said sliding switch rails of said points;

characterized in that

a sliding switch rail of each said point is fastened between point rails and are connected therewith by means of units;

locks that are connected with said axis of said shift mechanism and disposed at junctions of switch rails with tracks of straight and lateral directions for ensuring the locking of the switch rails;

wherein each said unit providing connection between the point rails and switch rails comprises a guide that is rigidly fastened to the point rail; a sliding wedge placed in the guide that is capable of moving longitudinally and rigidly fastened with its both ends to point rods; a wedge rigidly fastened to the switch rail that is rested upon said sliding wedge;

and wherein said sliding wedges are connected to one another by means of point rods, the last of the point rods being connected with the axis of said shift mechanism.

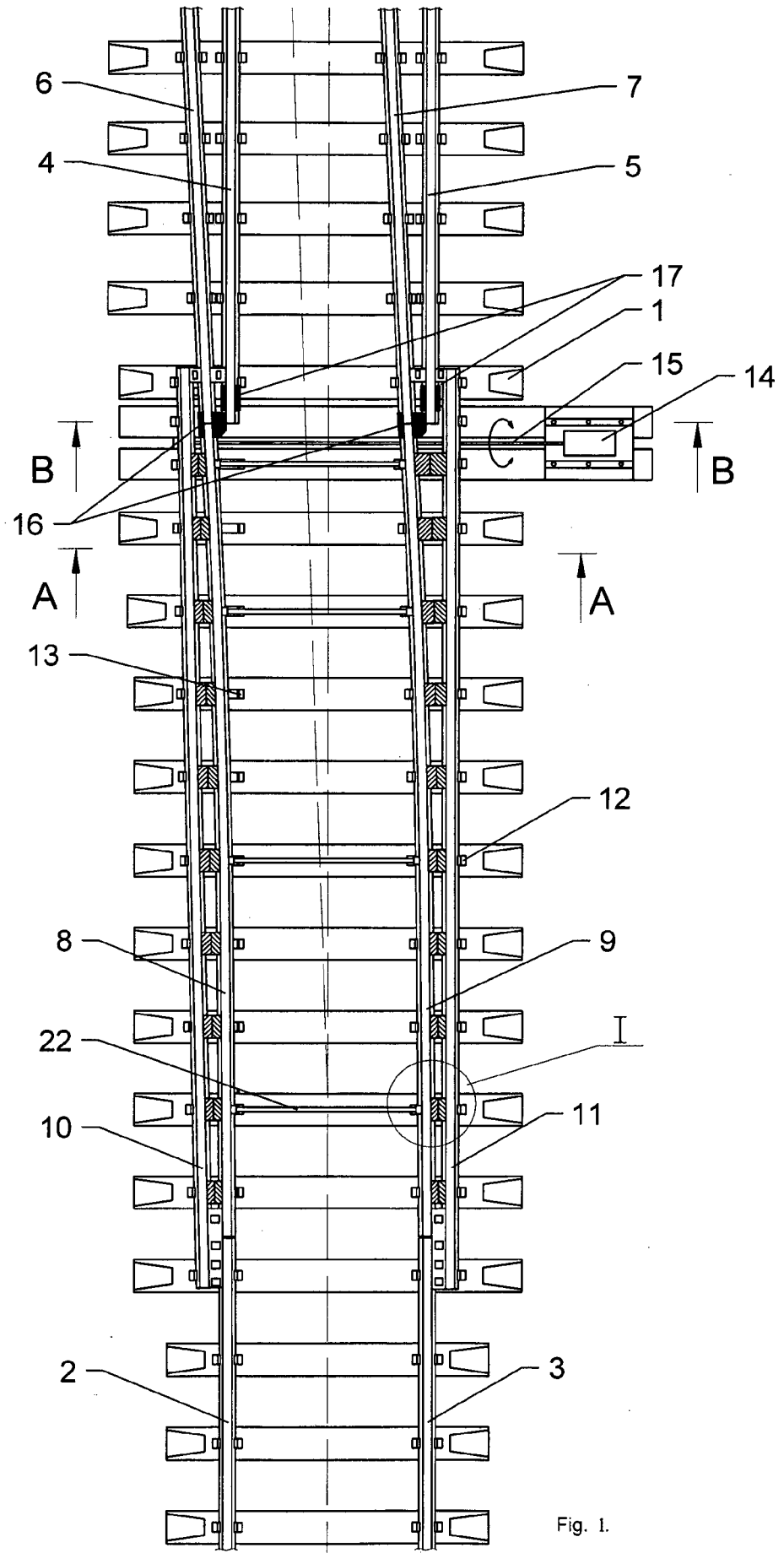


Fig. 1.

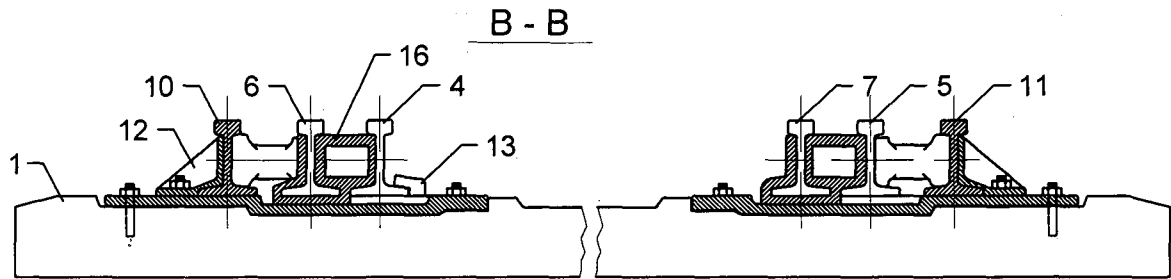


Fig. 3.

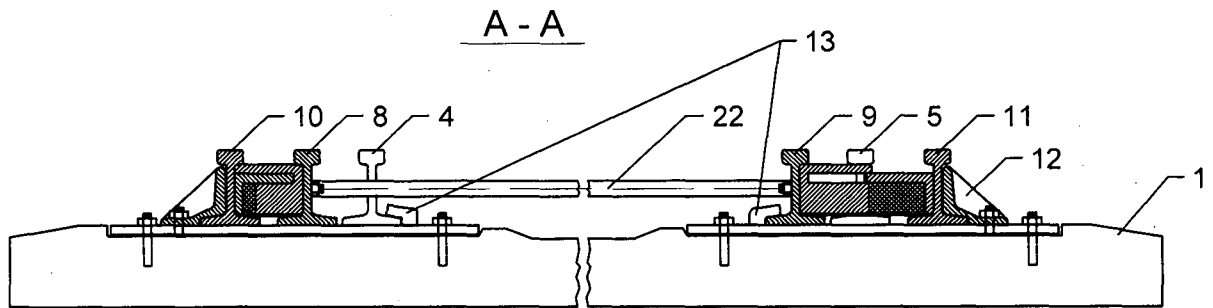


Fig. 2.

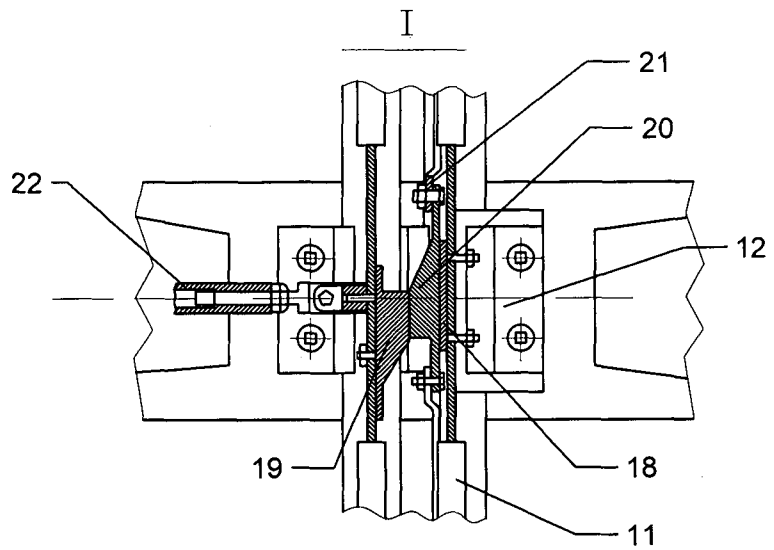


Fig. 4.

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
 INV. E01B7/00 B61L5/10
 ADD.
 According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
 Minimum documentation searched (classification system followed by classification symbols)
 E01B B61L
 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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