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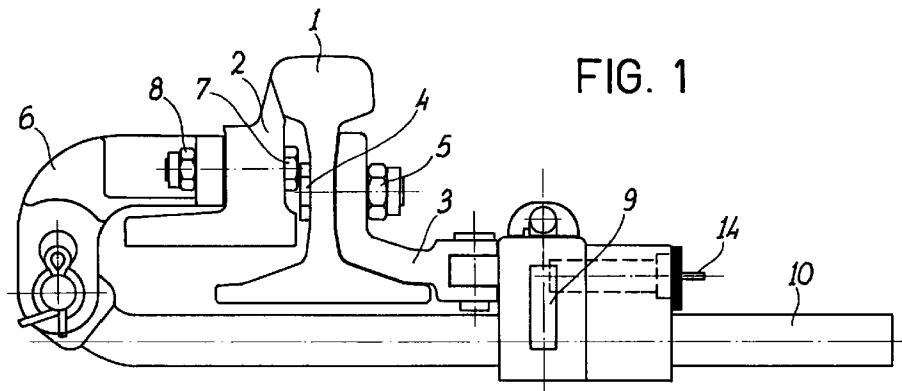
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(54) **Switch locking device**

(57) The invention relates to a switch locking device comprising a fixed support (3), integral with the switch rail (1), a movable support (6), integral with the switch point (2), an element (10) slidable between two positions, having one end coupled to said movable support

(6) and slidably provided in a block (9) fixed to said fixed support (3), said block (9) providing means (13, 14) for locking and/or allowing the sliding of said slidable element (10) between said two positions.



EP 0 818 376 A1

## Description

The present invention relates to a switch locking device.

More particularly, the invention relates to a device of the above kind which allows to replace the usual clamp switch locking devices and the spacer apparatuses.

As it is well known, at present the railway switches are electronically controlled by a centralised control panel and remote controls.

However, in some cases it occurs that the electronic control system does not properly works, so that it is necessary to manually adjust the switch in the proper position and the relevant blocking in said position.

At present, the operation of blocking the switch in position is performed by rather complex systems, for example employing clamps which are manually applied by the operators.

It is evident that such a solution is surely not convenient, difficult to be realised and particularly not able to guarantee against tampering of the switch.

In this situation, the Applicant has realised a device which allows to lock the switches in a convenient, safe and anti - tampering way.

Particularly, the solution suggested according to the invention allows to position the device within the sleeper recess between the second and the third bearing, so that it is not necessary to arrive every time in situ with the switch locking device.

Furthermore, the solution according to the present invention allows to perform the locking and unlocking operations in an extremely simple way, without any chance of mistaken by the operator, even if the latter should work in the worse situation.

Moreover, with the solution according to the present invention it is possible to increase the train speed close to the switches up to 60 km/h.

Further, the device according to the invention allows a remote visible control of the switch.

These and other results are obtained according to the present invention by a switch locking device comprising substantially a fixed support coupable with the rail, a movable support coupable with the switch point and movable between two positions, and an element allowing the sliding of said movable support between said two positions and locking it in position, without any possibility to casually tamper it.

It is therefore specific object of the present invention a switch locking device comprising a fixed support, integral with the switch rail, a movable support, integral with the switch point, an element slidable between two positions, having one end coupled to said movable support and slidably provided in a block fixed to said fixed support, said block providing means for locking and/or allowing the sliding of said slidable element between said two positions.

Preferably, according to the invention, said block

provides a two position unlocking lever and a key lock, the key of said lock being extractable from said lock just when said unlocking lever is in one of said two positions, respectively locking or "free" positions.

Still according to the invention, the coupling between said movable support and said slidable element is made up by a ball joint.

Further, according to the invention, on said slidable element two reference indentations for the two positions are realised.

The present invention will be now described, for illustrative but not limitative purposes, according to its preferred embodiments, with particular reference to the figures of the enclosed drawings, wherein:

figure 1 is a side view of the device according to the invention;

figure 2 is a top view of the device of figure 11; and figure 3 is a schematic top view of devices according to the invention in use.

Making first reference to figures 1 and 2, it is shown an embodiment of the device according to the invention.

By the numeral 1, the rail is indicated, while by the numeral 2 the point of the switch is indicated.

The device according to the invention provides a fixed support 3 coupled with the rail 1 by the bolt 4 and the nut 5, and a movable support 6 coupled with the point 2 by the bolts 7 and the nuts 8.

Rearwardly, the fixed support 3 is coupled with a block 9 within which a pin 10 slides, said pin being provided with two indentations 11 allowing its locking in two operative positions of the switch.

The end of the pin 10 opposed with respect to the one sliding within said block 9 is coupled with said movable support 6 by the ball joint 12, so that also the point 2, integral with the support 6, is movable between the two positions.

The block 9 is provided at the top with an unlocking lever 13 allowing or preventing the motion of the pin 10, as well as with a key lock 14.

The key lock 14 can be extracted only if the lever 13 is in one of the two positions, respectively free of locked positions.

In this way, only authorised people has access to the working of the device according to the invention.

Furthermore, the various components of the device according to the invention will be realised by materials having suitable sturdiness and strength in order to prevent a unauthorised tampering.

Observing figure 3, it can be noted that the device according to the invention is placed on the rails 1, between the second and the third tie, in the lower part of figure 3 the free switch position being shown and in the upper part of figure 3 the locked position of the switch being shown.

From the preceding specification the practical and safety advantages obtained by the device according to

the invention can be easily understood.

The present invention has been described for illustrative but not imitative purposes, according to its preferred embodiments, but it is to be understood that modifications and/or changes can be introduced by those skilled in the art without departing from the relevant scope as defined in the enclosed claims.

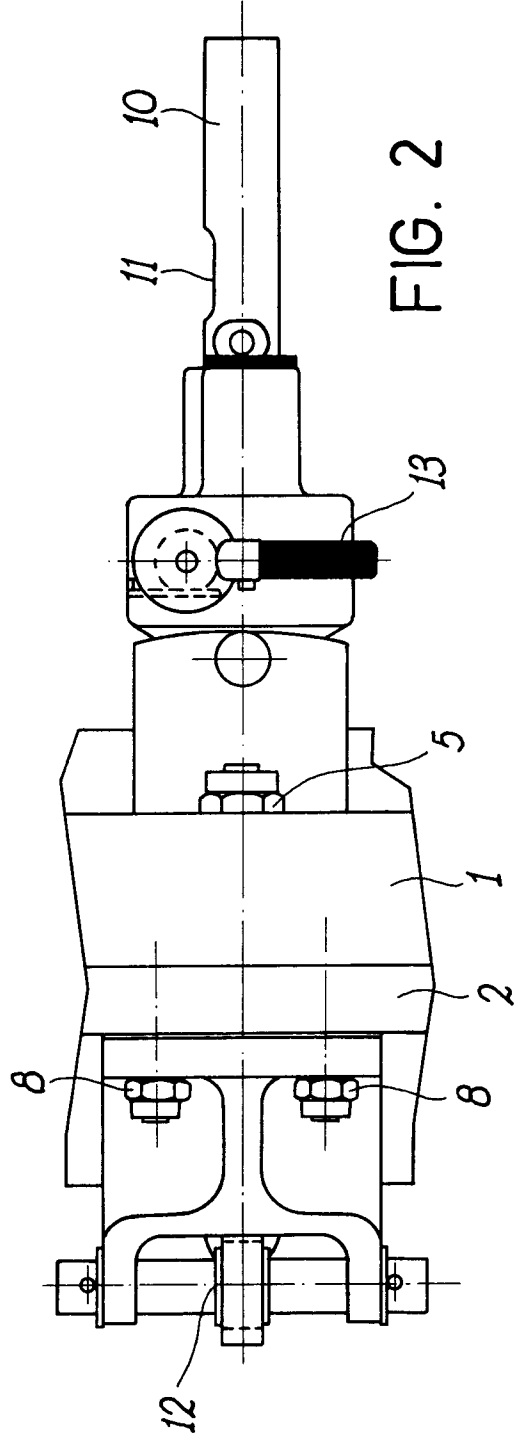
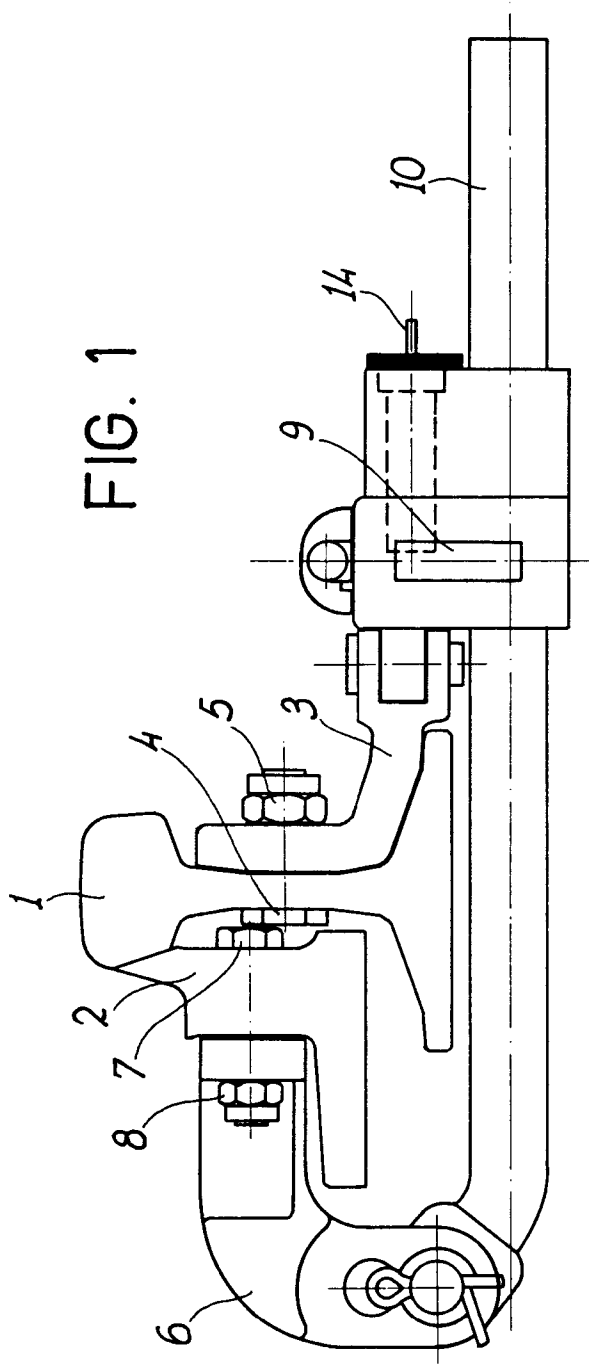
### Claims

1. Switch locking device characterized in that it comprises a fixed support, integral with the switch rail, a movable support, integral with the switch point, an element slidable between two positions, having one end coupled to said movable support and slidably provided in a block fixed to said fixed support, said block providing means for locking and/or allowing the sliding of said slidable element between said two positions. 10 15 20
2. Switch locking device according to claim 1, characterized in that said block provides a two position unlocking lever and a key lock, the key of said lock being extractable from said lock just when said unlocking lever is in one of said two positions, respectively locking or "free" positions. 25
3. Switch locking device according to one of the preceding claims, characterized in that the coupling between said movable support and said slidable element is made up by a ball joint. 30
4. Switch locking device according to one of the preceding claims, characterized in that on said slidable element two reference indentations for the two positions are realised. 35
5. Switch locking device according to any one of the preceding claims, substantially as illustrated and described. 40

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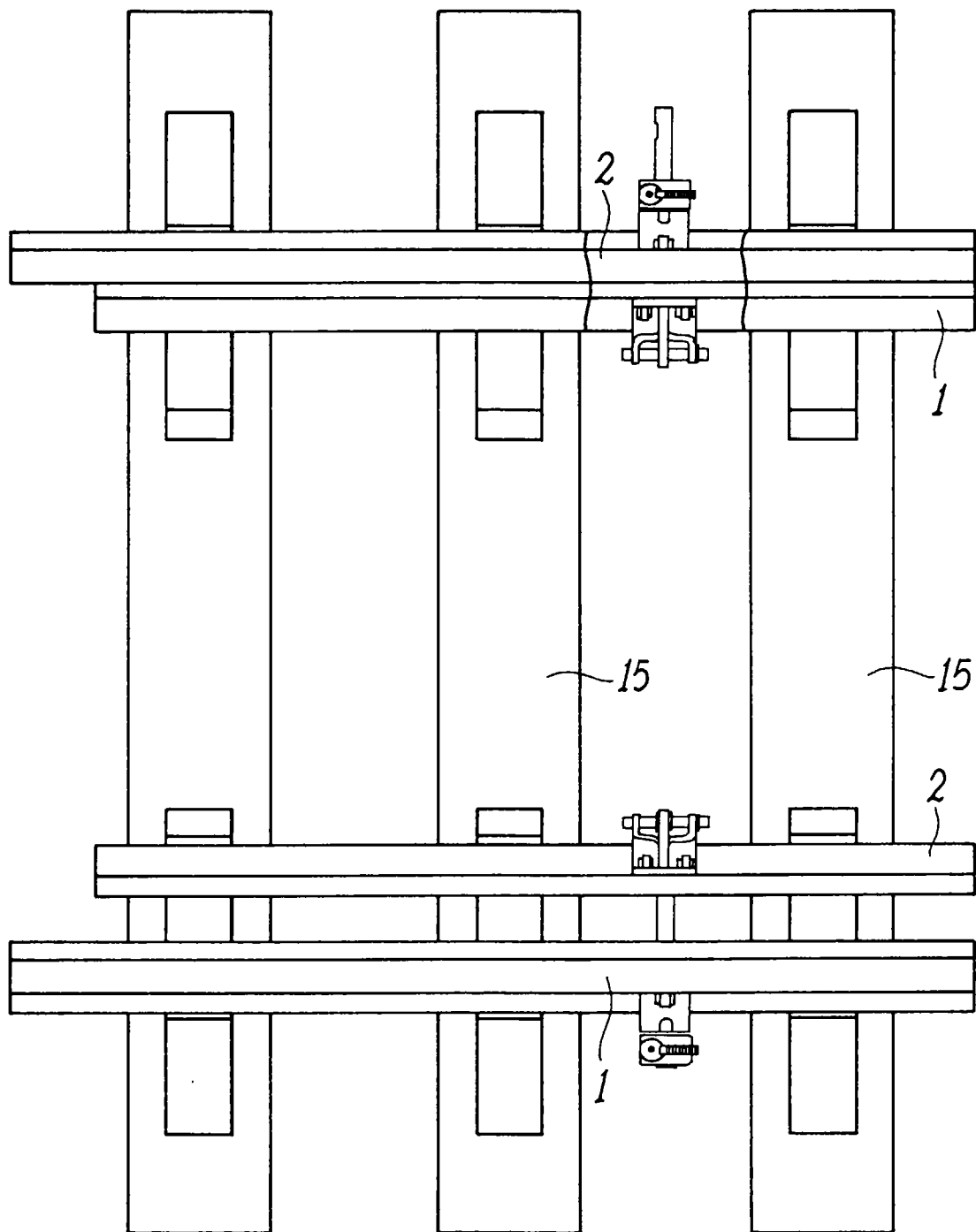


FIG. 3



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EUROPEAN SEARCH REPORT

Application Number  
EP 96 83 0336

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X Y	GB-A-209 080 (SOCIÉTÉ ANONYME L'ASTER) * the whole document * ---	1,3-5 2	B61L5/10
Y	FR-A-390 801 (STRANGE) * the whole document * ---	2	
A	WO-A-95 03199 (BWG BUTZBACHER WEICHENBAU GMBH) ---		
A	EP-A-0 455 182 (BWG BUTZBACHER WEICHENBAU GMBH) ---		
A	EP-A-0 455 153 (BWG BUTZBACHER WEICHENBAU GMBH) -----		
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		10 December 1996	Reekmans, M
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document			

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