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Szellemi Tulajdon Nemzeti Hivatala**EURÓPAI SZABADALOM**
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SBGK Szabadalmi Ügyvivői Iroda, Budapest(54) **Védőszerkezet sínek közötti készülékekre, főleg sínre és/vagy aljra erősített készülékekre**

Az európai szabadalom ellen, megadásának az Európai Szabadalmi Közlönyben való meghirdetésétől számított kilenc hónapon belül, felszólalást lehet benyújtani az Európai Szabadalmi Hivatalnál. (Európai Szabadalmi Egyezmény 99. cikk(1))

A fordítást a szabadalmas az 1995. évi XXXIII. törvény 84/H. §-a szerint nyújtotta be. A fordítás tartalmi helyességét a Szellemi Tulajdon Nemzeti Hivatala nem vizsgálta.



TECHNICAL FIELD

5 The present invention relates to a protective device for devices between rails, in particular for rail-mounted and/or sleeper-mounted devices, such as balises, according to the preamble of claim 1.

10

PRIOR ART

In railroad technology, rail sleepers are used not only to secure rails, but also to secure additional technical rail devices (see US 5 507 434 A, GB 2 347 456 A or WO 2011/141118 A1). For example, it is known to arrange, on the upper side of the rail sleeper, balises which serve to detect a train which is traveling above.

20 Such balises are generally well protected against the rail traffic loads by their inherent construction.

However, during maintenance operations, that is to say, for example, during ballasting or leveling operations, 25 the balises frequently become damaged. For this reason, in practice, one has begun to manually process the regions around the balise. This manual processing is extremely complex. In addition, it is also not possible to achieve a quality which is comparable with work 30 performed by machine.

SUMMARY OF THE INVENTION

Based on this prior art, an object of the invention is to provide a device which overcomes the disadvantages 35 of the prior art. In particular, a device is intended to be provided by means of which improved ballasting or leveling can be achieved about a sleeper which is

equipped with a sleeper-mounted or rail-mounted device, such as a balise.

This object is achieved by the subject-matter according to claim 1. Accordingly, a protective device serves to protect sleeper-mounted or rail-mounted devices, in particular for balises. These devices are located between two railroad rails. The protective device comprises a cover which defines a hollow space for receiving the sleeper-mounted or rail-mounted device, and at least two securing elements which are connected to the cover and intended for securing the protective device to a rail and/or a sleeper. The hollow space is in particular delimited in an upward direction. That is to say, the hollow space is preferably at least partially limited by the cover. At least one of the securing elements is designed so as to be able to be moved relative to the cover from a release position into a locking position.

Using this movable securing element, the protective device can be locked relative to the rail or the sleeper. The protective device can thereby be temporarily secured to the rail and/or the sleeper during maintenance operations, in particular during ballasting operations. Following completed maintenance operations, the protective device can be removed again from the rail and/or the sleeper. The movable securing element can also be referred to as a locking element.

In the locking position, the protective device can be locked or arrested with respect to a track arrangement using the movable securing element. In a preferred manner, the securing element is locked with respect to the cover, wherein the securing element locks the cover or the protective device with respect to the track arrangement in the locking position.

The movable securing element is preferably designed in such a manner that it can be moved manually from the release position into the locking position and back again from the locking position into the release position. The fitter of the protective device may thus secure it to a track arrangement, in particular to a rail and/or a sleeper, without the aid of a tool.

Preferably, at least one of the securing elements is designed in a rigid manner. Consequently, in a development of the invention, rigid and movable securing elements are therefore provided. This has the advantage during the mounting of the protective device that the fitter has to actively manipulate only the movable securing elements.

In a particularly preferred manner, precisely two movable securing elements and precisely two rigid securing elements are arranged.

Preferably, the securing elements have a receiving space for receiving and/or partially engaging around parts of a rail and/or a sleeper.

Preferably, the cover has two end regions, which in the installed state are directed toward the rails, wherein the securing elements are arranged at opposite end regions of the cover.

In a particularly preferred manner, the movable securing elements are arranged in one of the end regions and the rigid securing elements are arranged in the other of the end regions. This enables suspension of the rigid securing elements at one side and arresting or locking of the securing elements at the other side.

Preferably, the cover extends along a longitudinal axis and has a length which substantially corresponds to the

gauge. Furthermore, the cover preferably has a width transverse to the longitudinal axis which is greater than the width of the sleeper. The rail-mounted and/or sleeper-mounted device can thereby be covered in a particularly effective manner. In addition, the protective device can be used with different rail-mounted and/or sleeper-mounted devices.

In a particularly preferred embodiment, the cover is in the form of a U-shaped profile having a base shank and having lateral shanks which adjoin the base shank at both sides, wherein the base shank and the lateral shanks define said hollow space. The U-shaped profile preferably extends in this instance along said longitudinal axis.

Preferably, the securing elements are connected to the cover by means of the lateral shanks and/or the base shank.

According to the invention, the movable securing element can be pivoted about a pivot axis. The movable securing element can also be referred to as a detent catch which can be pivoted about said pivot axis.

Preferably a flap which is rigidly connected to the cover is arranged with spacing from the lateral shank, wherein the movable securing element is placed between the lateral shank and the flap.

Said pivot axis is preferably provided by means of a bolt or a screw which extends through the lateral shank of the cover, wherein the bolt or the screw preferably extends through the lateral shank and the securing element as far as the flap.

In a particularly preferred manner, the movable securing element can be locked with a locking element.

with respect to the cover in the locking position and/or in the release position.

5 The locking element is, for example, a locking pin which can be guided through an opening in the securing element and through an opening in the cover or in said flap. The locking pin can be secured by means of a loss prevention device to the cover or to the securing element.

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Preferably, the protective device is made of metal, in particular steel, in a particularly preferred manner stainless steel. The protective device may also be made of aluminum. In a development, the protective device 15 may also be made of plastics material.

20

A track arrangement comprises a sleeper, two rails which are securely connected to the sleeper and which are arranged spaced apart from each other at a gauge and a sleeper-mounted and/or rail-mounted device and a protective device in accordance with the above description which is arranged above the sleeper-mounted and/or rail-mounted device between the rails. Within this track arrangement, the sleeper-mounted or rail- 25 mounted device is covered by the protective device, whereby the track arrangement can be processed by machine, for example, during a ballasting operation or the leveling operation.

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Said securing elements, in particular the rigid and movable securing elements, can preferably be connected to a rail foot of said rail. In a particularly preferred manner, the protective device can be suspended on the rail.

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A method for mounting a protective device in accordance with the above description is characterized in that the protective device is connected with said at least one securing element to the rail and/or the sleeper. In a

particularly preferred manner, the protective device is locked with respect to the track arrangement by means of the movable securing element.

5 A method for maintaining a track arrangement, in particular for ballasting or leveling the track arrangement, in accordance with the above description is characterized in that before the steps for maintenance, in particular before the ballasting or
10 leveling, a protective device is mounted above the sleeper-mounted or rail-mounted device and in that after the completed steps for maintenance, in particular after the completed ballasting or leveling, said protective device is removed again.

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Other embodiments are set out in the dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

20 Preferred embodiments of the invention are described below with reference to the drawings, which act only as an explanation and are not intended to be interpreted to be limiting. In the drawings:

25 Figure 1 shows a view of a track arrangement with a protective device according to the invention;

Figure 2 shows a plan view of the track arrangement according to Figure 1;

30 Figure 3 shows a perspective view of the track arrangement according to Figure 1;

Figure 4 shows a detailed view of Figure 3;

Figure 5 shows a perspective view of the protective device according to Figure 1;

35 Figure 6 shows a detailed view of the protective device according to Figure 1; and

Figure 7 shows a detailed view of the protective device according to Figure 1.

DESCRIPTION OF PREFERRED EMBODIMENTS

Figures 1 to 4 show different views of a track arrangement with a protective device 1 according to the present invention.

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The track arrangement typically comprises a sleeper 9 and two rails 8 which are securely connected to the sleeper 9 and which are arranged spaced apart from each other with a gauge 5. Furthermore, the track arrangement comprises a sleeper-mounted and/or rail-mounted device 2. This device 2 is, for example, a balise 2. The device or the balise may be secured either to the sleeper 9 and/or to the rail 8. In the present embodiment, the device 2 is connected to the sleeper 9 by means of a screw 5, wherein the screw 5 can at the same time serve to secure the rail 8. The protective device 1 according to the invention is arranged above the device 2. The protective device 1 is temporarily arranged and protects the device 2 during processing of the track arrangement by machine, such as, for example, during a ballasting or leveling operation. The track arrangement is typically supported in a ballast bed with ballast.

25 The protective device 1 according to the invention is designed in such a manner that it comes to rest between the two rails 8 and the device 2 which is located above the sleeper 9 is accordingly covered and thus protected from external influences. As a result of the coverage, 30 the protective device 1 protects the device 2 from mechanical influences such as those which occur, for example, during maintenance operations. The protective device 1 is in this instance designed in such a manner that it can be temporarily installed, in particular in 35 the case of said maintenance operations. For example, such maintenance operations are ballasting or leveling operations of the track arrangement. In this instance, the protective device 1 is mounted before the

maintenance work, and the protective device 1 is removed again after the maintenance work.

5 The protective device 1 is shown in detail in Figures 5 to 7. With reference to these figures and also with reference to the previous figures, the protective device 1 according to the invention is explained in detail for sleeper-mounted and/or rail-mounted devices 2, in particular for balises.

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The protective device 1 comprises a cover 3, which defines a hollow space 4 for receiving the sleeper-mounted and/or rail-mounted device 2. Furthermore, the protective device 1 comprises at least two securing elements 6, 7 which are connected to the cover 3 and intended for securing the protective device to a rail 8 and/or to a sleeper 9. The rail 8 and the sleeper 9 are integral components of the track arrangement, as explained in the introduction.

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The cover 3 is preferably designed in one piece.

At least one of the securing elements, in this instance the securing element 6, is designed so as to be able to be moved relative to the cover 3 from a release position into a locking position. This movable securing element 6 is thus a securing element 6 which can be fixed or locked and by means of which the protective device 1 can be fixed relative to the track arrangement. The movable securing element may also be referred to as a locking element. The securing element 6 is locked with respect to the cover, wherein the securing element 6 locks the cover with respect to the track arrangement in the locking position.

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The other securing element 7 is designed in a rigid manner. Therefore, this other securing element 7 is designed so as not to be able to be moved relative to

the cover 3, but instead is arranged rigidly or fixedly with respect to the cover 3.

Consequently, the protective device 1 comprises in a preferred embodiment at least one securing element 7 which is designed in a rigid manner and at least one securing element 6 which is designed to be movable.

In Figure 5, it can be seen that precisely two movable securing elements 6 and precisely two rigid securing elements 7 are arranged. The securing elements 6 and 7 respectively are arranged in pairs at an end region 10, 11 of the cover 3. The two movable securing elements 6 are arranged in a first end region 10. The two rigid securing elements 7 are arranged in the second end region 11. With respect to the hollow space 4, the securing elements 6, 7 are each arranged with spacing from each other.

The above-described paired arrangement of the securing elements 6, 7 has the advantage that the protective device 1 can be assembled manually on the track arrangement in a particularly simple manner. This assembly is shown in Figure 1. During the assembly, the securing portion 11 is suspended with the rigid securing elements 7 on a rail 8. The protective device 1 is then pivoted downward. This is indicated with the arrow V. As soon as the protective device comes to rest with the end 10 on the rail 8, the movable securing elements 6 can be moved from the release position into the locking position, wherein the securing elements 6 then correspondingly encompass the rail 8 and lock the protective device 1 with respect to the track arrangement.

The securing elements 6, 7 each have a receiving space 18 for receiving and/or partially engaging around parts of the rail 8 and/or a sleeper 9. In the present embodiment, the receiving spaces 18 are designed in

such a manner that the securing elements 6, 7 encompass the rail foot 19. This encompassing of the rail foot 19 is accordingly illustrated in Figure 4. In Figure 4, the securing element 6 is in the locking position. In this instance, the securing element 6 encompasses the rail foot 19 with the receiving space 18. That is to say, the rail foot 19 protrudes into the receiving space 18.

In this embodiment, the receiving space 18 of the movable securing element 6 is formed by means of the cover 3 and a projection 20 on the movable securing element 6. This encompassing is explained in more detail below.

The rigid securing element 7 also encompasses the rail foot 19 with a receiving space 18.

The receiving space 18 is rigid in the rigid securing element 7 and is formed in the movable securing element 6 by the movement of the securing element 6 into the locking position.

As already mentioned, the cover 3 has two end regions 10, 11. In the installed state, these end regions 10, 11 are directed toward the rails 8. The securing elements 6, 7 are arranged at opposite end regions 10, 11 of the cover 3. In one of the end regions, in this instance in the end region 10, the movable securing elements 6 are arranged respectively and in the other of the end regions, in this instance in the end region 11, the rigid securing elements 7 are arranged respectively. A mixture of the securing elements would also be conceivable.

The cover 3 extends along a longitudinal axis A and has a length L. The length L substantially corresponds to the gauge S. The expression "substantially corresponds to the length L" is intended to be understood to mean

that the cover 3 is designed to be slightly smaller along the longitudinal axis than the gauge S so that the protective device can be simply placed between the two rails 8 of the track arrangement.

5

Furthermore, the cover 3 has a width B which extends transversely to the longitudinal axis A and which is greater than the width of the sleeper 9. Consequently, the cover 3 can cover the sleeper 9 in an optimum manner.

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The cover 3 is, as shown, for example, in Figures 7 and 6, in the form of a U-shaped profile. The U-shaped profile comprises a base shank 12 and lateral shanks 13 which are formed at the side of the base shank 12 and which adjoin the base shank 12. The base shank 12 and the lateral shanks 13 define the hollow space 4.

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The lateral shanks 13 are provided in this instance with a plurality of portions and are designed so as to be partially curved. These different portions have the reference numeral 21. As a result of these bent portions 21, the cover 3 is provided with additional rigidity.

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The securing elements 6, 7 are connected to the cover 3 by means of the lateral shanks 13. Alternatively, however, the securing elements 6, 7 can also be connected to the cover with the base shank 12. A combined arrangement of the securing elements 6, 7, that is to say the securing on the lateral shank 13 and on the base shank 12, is also conceivable.

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With reference to Figures 6 and 7, the movable securing element 6 will now be explained in detail. The movable securing element 6 can be pivoted about a pivot axis 14. In Figure 6, the movable securing element 6 is shown in the locking position. In Figure 7, the securing element 6 is located in the release position.

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It has been accordingly pivoted back about the pivot axis 14. The securing element 6 itself is in the present embodiment in the form of a catch 22. This catch 22 has the projection 20 which has already been mentioned above and which defines the receiving space 18 in a downward direction. The catch 22 can in this instance be pivoted about said pivot axis 14, wherein the projection 20 is also pivoted and encompasses the rail foot 19.

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The movable securing element 6 in the present embodiment is supported at two locations. On the one hand, the securing element 6 is supported on the lateral shank 13 and, on the other hand, the securing element 6 is supported on a flap 16. The flap 16 is arranged with spacing from the lateral shank 13 and the securing element 6 is located between the lateral shank 13 and the cover 3. The flap 16 is, for example, welded to the cover 3. In this instance, the pivot axis 14 is provided by a screw 15. The screw shaft 28 of the screw 15 extends through the lateral shank 13 of the cover 3 and protrudes into the flap 16. The screw 15 provides said pivot axis 14 with its screw shaft 22. The screw 15 engages with a thread in a corresponding thread 23 in the flap 16.

20
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The spacing between the lateral shank 13 and flap 16 is sized in this instance in such a manner that it is slightly larger than the width of the securing element 6 so that it can be pivoted well.

30

It can further clearly be seen in Figures 6 and 7 that the securing element 6 can be locked with a locking element 17 with respect to the cover 3 in the locking position and/or in the release position. In this instance, the locking element 17 is in the form of a pin. This pin engages in the locking position in an opening 24 which is arranged on the flap 16. Furthermore, the pin is supported in an opening 25 in

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the securing element 6. As soon as the securing element 6 is located in the locking position, the fitter can move the pin 17 in the opening 25 so that it extends through the opening 24. Consequently, the pin therefore
5 extends through the securing element 6 and the flap 16, wherein a movement between the flap 16 which is formed on the cover 3 and the securing element 6 is made impossible. In the release position, as shown in Figure 7, the securing element 6 is pivoted back. To this end,
10 the pin 17 is moved out of the opening 24 of the flap 16. The flap 16 has a face 26 for assembly securing of the securing element 6 in the release position. The pin 17 may rest on this face 26. Consequently, the movable securing element 6 is secured in the release position
15 and the fitter can mount the protective device 1 in a simple manner.

In the present embodiment, the cover has a recess 27 for receiving the locking element 17 in the release
20 position.

Furthermore, in this instance, the securing element 6 has an inclined face 27. In this instance, this inclined face 27 is part of the projection 20 and has
25 the advantage that the securing element 6, during assembly, should it not be located in the release position, is pivoted in the direction of the release position.

30 In summary, the protective device 1 has the advantage that it can be fitted to a track arrangement in a very simple and rapid manner. Consequently, the device is well suited for temporary use.

LIST OF REFERENCE NUMERALS



- 1 Protective device
- 2 Balise
- 3 Cover
- 4 Hollow space
- 5 Screw
- 6 Movable securing element
- 7 Rigid securing element
- 8 Rail
- 9 Sleeper
- 10 End region
- 11 End region
- 12 Base shank
- 13 Lateral shank
- 14 Pivot axis
- 15 Screw
- 16 Flap
- 17 Locking element
- 18 Receiving space
- 19 Rail foot
- 20 Projection
- 21 Portions
- 22 Catch
- 23 Thread
- 24 Opening
- 25 Opening
- 26 Face
- 27 Recess
- 28 Screw shaft

716067/DO

VÉDŐSZERKEZET SÍNEK KÖZÖTTI KÉSZÜLÉKEKRE, FŐLEG SÍNRE ÉS/VAGY
ALJRA ERŐSÍTETT KÉSZÜLÉKEKRE

SZABADALMI IGÉNYPONTOK

1. Védőszerkezet (1) sínek közötti készülékekhez, főleg aljra és/vagy sínre erősített készülékekhez (2), mint például ballizekhez, amely magában foglal

egy burkolatot (3), amely az aljra és/vagy sínre erősített készülék (2) befogadására egy üregteret (4) határol, és

legalább két rögzítőelemet (6, 7) a védőszerkezet sínen (8) és/vagy aljon (9) való rögzítésére, amelyek a burkolattal (3) össze vannak kapcsolva,

ahol legalább az egyik rögzítőelem (6) a burkolathoz (3) képest szabaddá tevő helyzetből arretálási helyzetbe mozgathatóan van kialakítva, **azzal jellemezve**, hogy a mozgatható rögzítőelem (6) egy elfordulási tengely (14) körül elfordítható.

2. Az 1. igénypont szerinti védőszerkezet (1), **azzal jellemezve**, hogy legalább az egyik rögzítőelem (7) merevre van kialakítva.

3. A 2. igénypont szerinti védőszerkezet (1), **azzal jellemezve**, hogy pontosan két mozgatható rögzítőelem (6) és pontosan két merev rögzítőelem (7) van rajta elhelyezve.

4. Az előző igénypontok egyike szerinti védőszerkezet (1), **azzal jellemezve**, hogy a rögzítőelemek (6, 7) egy sín (8) és/vagy egy alj (9) részeinek befogadására és/vagy részbeni körülfogására befogadótérrel (18) vannak ellátva.

5. Az előző igénypontok egyike szerinti védőszerkezet (1), **azzal jellemezve**, hogy a burkolat (3) két végrésszel (10, 11) rendelkezik, amelyek felszerelt állapotban a sínek (8) irányába állnak,

ahol a rögzítőelemek (6, 7) a burkolat (3) egymással átellenes végrészein (10, 11) vannak elhelyezve, és előnyös módon az egyik végrészben (10) a mozgatható rögzítőelemek (6), a másik végrészben (11) pedig a merev rögzítőelemek (7) vannak elhelyezve.

6. Az előző igénypontok egyike szerinti védőszerkezet (1), **azzal jellemezve**, hogy a burkolat (3) egy hossz tengely (A) mentén helyezkedik el, és akkora hosszúsággal (L) rendel-

kezik, amely lényegében megegyezik a nyomtávval (S), és/vagy hogy a burkolatnak akkora a hossz tengelyre (A) merőleges szélessége, amely nagyobb, mint az alj szélessége.

7. Az előző igénypontok egyike szerinti védőszerkezet (1), **azzal jellemezve**, hogy a burkolat (3) egy alapszárral (12) és az alapszárhoz (12) kétoldalt csatlakozó oldalszárakkal (13) bíró U profilú formával rendelkezik, ahol az alapszár (12) és az oldalszárak (13) a nevezett üregteret (4) határolják.

8. A 7. igénypont szerinti védőszerkezet (1), **azzal jellemezve**, hogy a rögzítőelemek (6, 7) az oldalszárakon (13) és/vagy az alapszáron (12) keresztül vannak összekapcsolva a burkolattal (3).

9. Az előző igénypontok egyike szerinti védőszerkezet (1), **azzal jellemezve**,

hogy az oldalszártól (13) távközre egy kötlem (16) el van helyezve, amely a burkolattal (3) mereven össze van kapcsolva, továbbá a mozgatható rögzítőelem (6) az oldalszár (13) és a kötlem (16) közé van behelyezve, és/vagy

hogy az elfordulási tengelyt (14) csap (15) vagy csavar (15) testesíti meg, ami a burkolat (3) oldalszárán (13) átmegy, továbbá a csap (15) vagy a csavar (15) előnyösen az oldalszáron (13) és a rögzítőelemen (6) keresztül a kötlem (16) terjed.

10. Az előző igénypontok egyike szerinti védőszerkezet (1), **azzal jellemezve**, hogy a mozgatható rögzítőelem (6) az arretálási helyzetben és/vagy a szabaddá tevő helyzetben egy arretálóelemmel (17) a burkolathoz (3) arretálható.

11. Vágányelrendezés, amely magában foglal egy aljat (9), két sínt (8), amelyek az aljjal fixen össze vannak kapcsolva, és egymástól nyomtávra (S) vannak elhelyezve, és egy aljra és/vagy sínre erősített készüléket (2), valamint az előző igénypontok egyike szerinti védőszerkezetet (1), ami az aljra vagy sínre erősített készülék (2) fölött a sínek (8) között van elhelyezve.

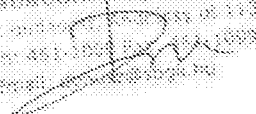
12. A 11. igénypont szerinti vágányelrendezés, **azzal jellemezve**, hogy a rögzítőelemek (6, 7) a sintonnal (19) összekapcsolhatóak.

13. A 11. vagy 12. igénypont szerinti vágányelrendezés, **azzal jellemezve**, hogy a burkolat (3) hosszúsága (L) lényegében megegyezik a nyomtávval, és hogy a burkolat szélessége (B) lényegében megegyezik az aljnak a burkolat hosszirányára merőlegesen mért szélességével.

14. Eljárás az 1-10. igénypont egyike szerinti védőszerkezet felszerelésére, **azzal jellemezve**, hogy a védőszerkezetet (1) a nevezett legalább egy rögzítőelem (6, 7) segítségével összekapcsoljuk a sínnel (8) és/vagy az aljjal (9).

15. Eljárás az 1-13. igénypont egyike szerinti vágányelrendezés karbantartására, főleg zúzottkőbe ágyazására vagy elegyengetésére, **azzal jellemezve**, hogy a karbantartási lépések előtt, főleg a zúzottkőbe ágyazás vagy az elegyengetés előtt az aljra és/vagy sínre erősített készülék fölé szereljük a védőszerkezetet (1), és hogy a karbantartási lépések után, főleg az elvégzett a zúzottkőbe ágyazás vagy az elvégzett elegyengetés után a nevezett védőszerkezetet (1) újból eltávolítjuk.

A meghatalmazott:

Meghatalmazott: 
SBCX Szabadalmi Ügyvédi Iroda
113

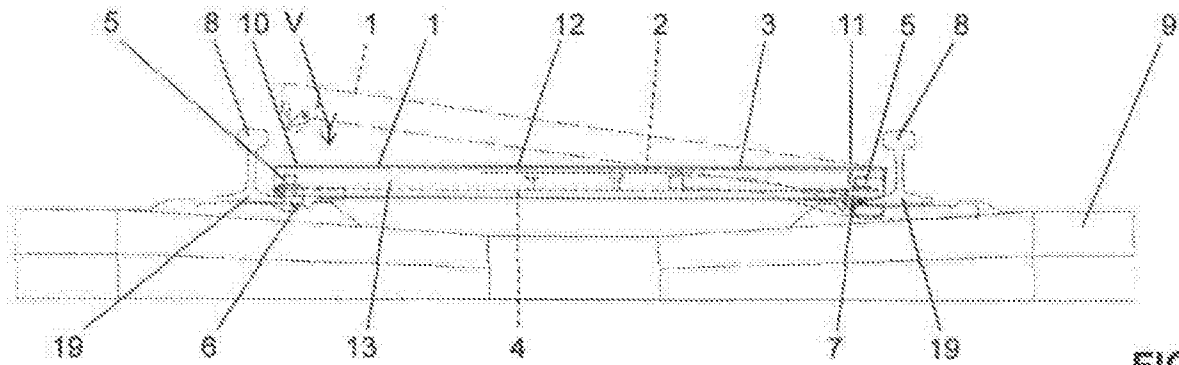


FIG. 1

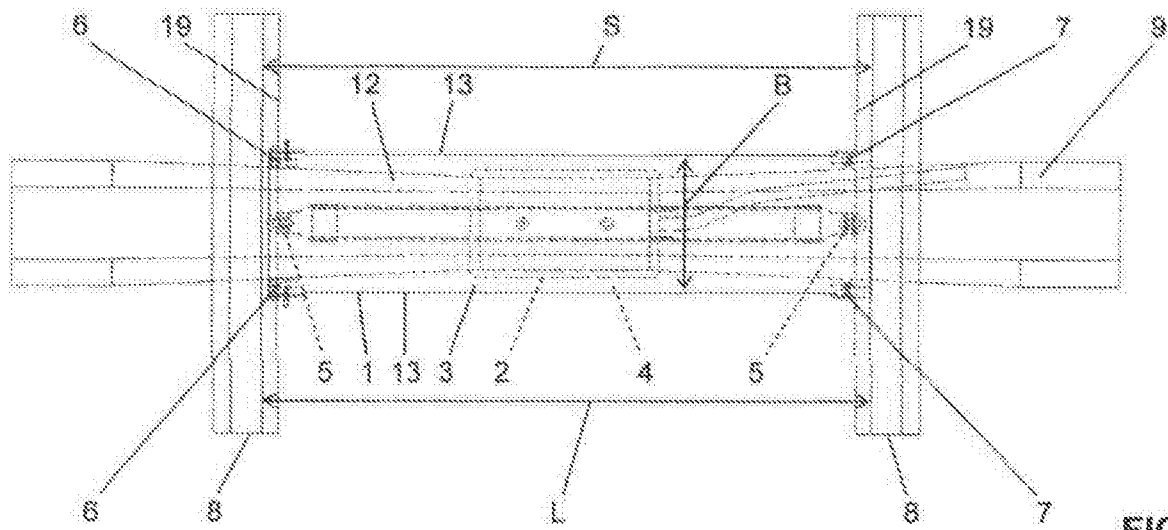


FIG. 2

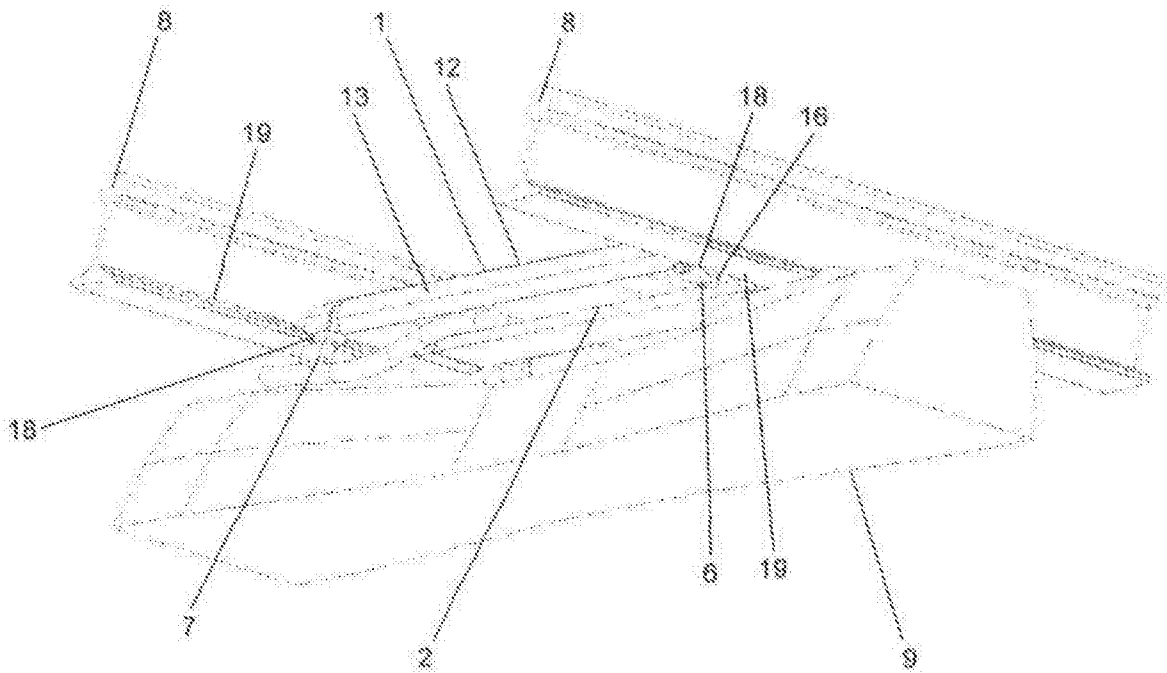


FIG. 3

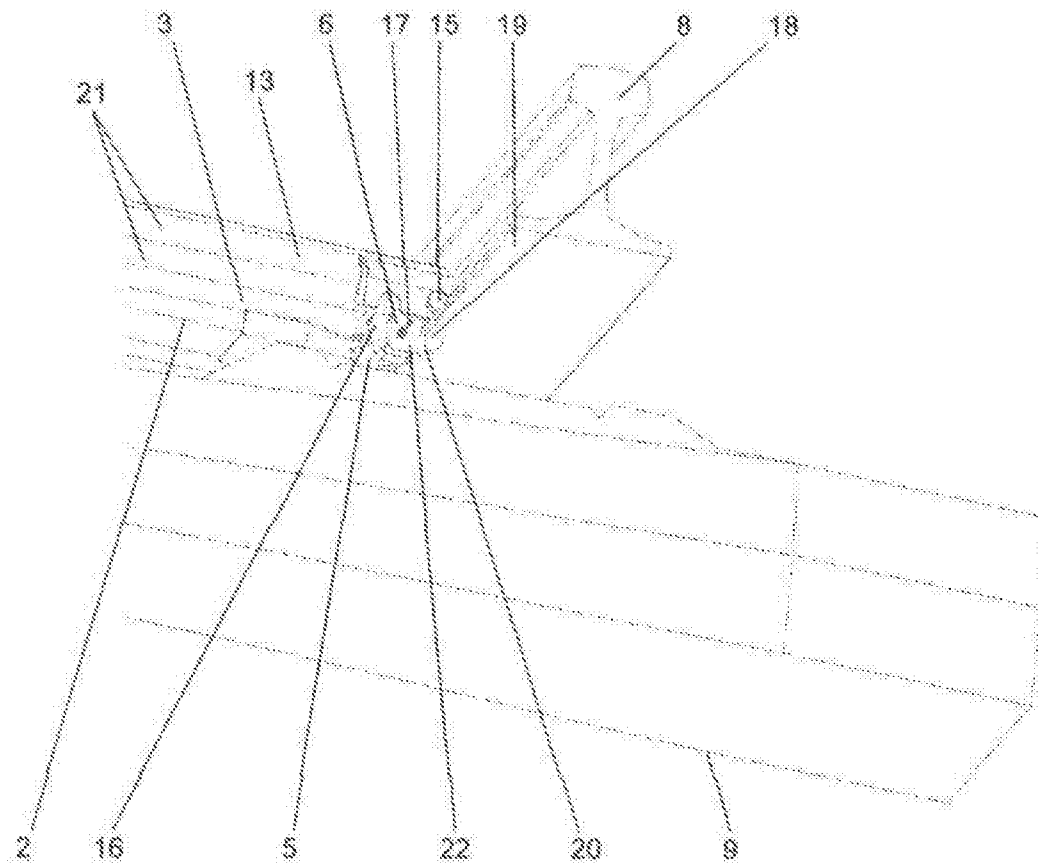


FIG. 4

