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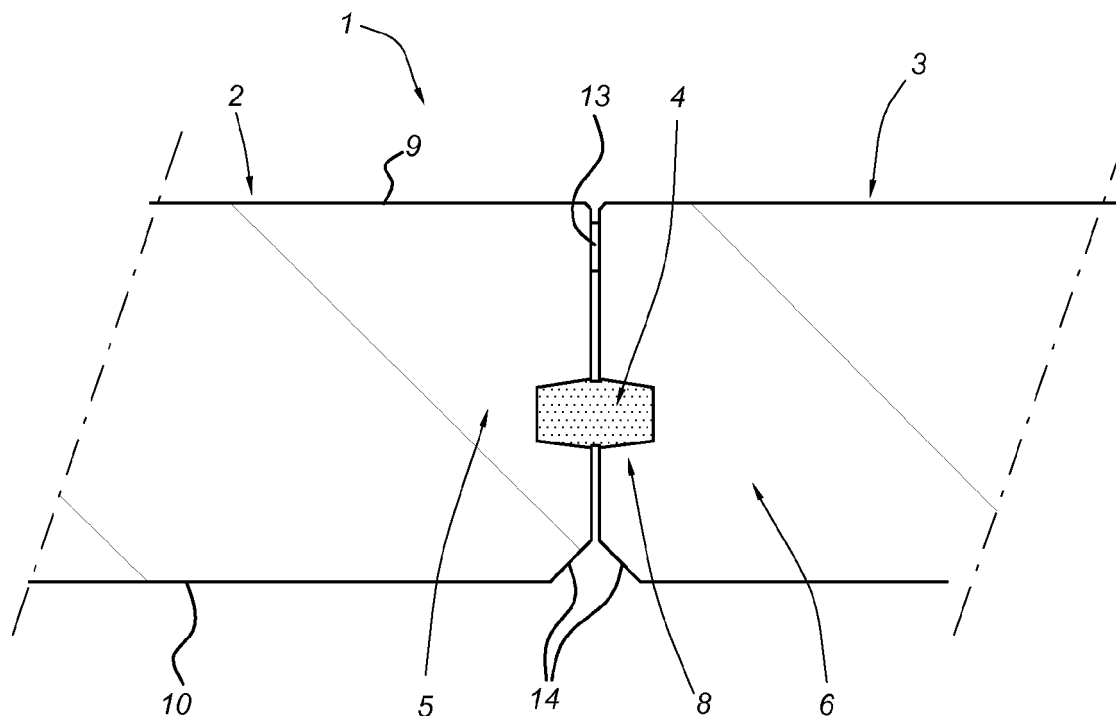
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(54) **Metalled road, road covering slab and method for laying a metalled road**

(57) Metalled road with a road direction and constructed from road covering slabs (2,3) following one another in the road direction and plastic profiles (4) lying between consecutive road covering slabs, wherein the two consecutive road covering slabs are provided on their

opposite-lying ends with a respective groove (7), and wherein the plastic profile extends into the respective grooves to form a tongue-and-groove-shaped joint, said joint linking two consecutive road covering slabs to form the metalled road.

**Fig 1**



## Description

### TECHNICAL FIELD OF THE INVENTION

**[0001]** The invention relates to a metalled road. A metalled road has a road direction and can be constructed from road covering slabs following one another in the road direction. In particular, the invention relates to a cycle path or a footpath. The invention furthermore relates to a road covering slab and a method for laying a metalled road.

### BACKGROUND OF THE INVENTION

**[0002]** The use of road covering slabs, in particular road covering slabs made from concrete, for laying a metalled road is generally known. The concrete road covering slabs are laid flat following one another and the space between consecutive slabs is filled with an elastic material, for example bitumen or mastic. The space between consecutive slabs acts as an expansion joint.

**[0003]** A metalled road is known from NL2003976 with a road direction and constructed from road covering slabs following one another in the road direction, **characterised in that** two consecutive road covering slabs are interlinked with a tongue-and-groove-shaped joint.

**[0004]** FR2808292 describes the use of concrete slabs for laying footpaths or cycle paths over train rails. The slabs are interlinked using interworking concrete parts of consecutive road covering slabs. Due to the design of the interworking concrete parts, consecutive road covering slabs cannot be displaced in relation to one another in the longitudinal direction of the road covering.

**[0005]** FR1311690 describes the use of separating elements in a layer of concrete in order to create therewith controllable break areas in the layer of concrete. The separating elements are inserted into the concrete during the manufacture of the concrete layer. If the concrete layer cracks due to expansion and contraction of the layer of concrete, the separating element ensures that the break does not become an opening through the concrete layer which runs from the top side to the bottom side.

**[0006]** GB2128665A describes a cycle path made from a flexible material. Consecutive slabs are interlinked by means of a number of mortise-and-tenon-shaped joints.

**[0007]** FR2715672 describes a cycle path wherein three types of concrete elements are used: rectangular slabs, slabs with the shape of a semicircle and slabs with a substantially triangular shape. The slabs are laid next to one another and have no interlinking mechanism.

### SUMMARY OF THE INVENTION

**[0008]** The object of the invention is to provide an improved metalled road. Advantages of the improved metalled road may entail simplified laying of the road, improved stability of the road covering, flatter road covering surface, lower maintenance costs relating to, for exam-

ple, weed control and the like.

**[0009]** A further object of the invention is to eliminate at least partially a disadvantage of a known metalled road.

**[0010]** A further object of the invention is to produce an alternative metalled road covering.

**[0011]** According to the invention, these objects are achieved with a metalled road with a road direction and constructed from road covering slabs following one another in the road direction and plastic profiles lying between consecutive road covering slabs, wherein the two consecutive road covering slabs are provided on their opposite-lying ends with a respective groove, and wherein the plastic profile extends into the respective grooves to form a tongue-and-groove-shaped joint, said joint linking two consecutive road covering slabs to form the metalled road. One advantage of the invention is that a road covering slab can be more simply removed from an already laid metalled road by laterally knocking out the plastic profile. This removal of a road covering slab is necessary in practice when a road covering slab is replaced as a result of, for example, damage to the road covering slab, or required maintenance on cabling or tree roots under the road covering slab.

**[0012]** One advantage of the tongue-and-groove-shaped joint is that it forms a joint over substantially the entire width of the metalled road. As the tongue remains located in the groove under all normal operating conditions, consecutive slabs cannot move in relation to one another in the vertical direction. If, for example, concrete is used, this joint also has the advantage that a tongue is more rigid over the entire width of the road covering than mortise-and-tenon joints which are implemented, for example, on both sides of the road covering. Furthermore, the plastic profile forms an integrated expansion joint to accommodate contraction and expansion of the road covering slabs in the road direction. Furthermore, the plastic profile forms a barrier to weed seeds below and above the plastic profile.

**[0013]** As the road covering slabs are provided on their opposite-lying ends with a respective groove, only one type of road covering slab is necessary in order to lay a quantity of road covering slabs consecutively. Moreover, the orientation of a road covering slab in the road direction during the laying operation is irrelevant.

**[0014]** The metalled road comprises a road covering side and a bottom side lying opposite the road covering side, wherein, in one embodiment, the groove is disposed between the road covering side and the bottom side in such a way that a first groove-forming edge in the bottom side gives way more readily than a second groove-forming edge in the road covering side. This offers the advantage that, if the road covering is overloaded, the groove-forming edge in the bottom side always gives way. This prevents the formation of an edge or ridge on the road covering side which causes inconvenience for users or even results in unsafe situations.

**[0015]** In one embodiment of the metalled road, the

distance from the groove to the road covering side is greater than the distance from the groove to the bottom side. This furthermore ensures that the first groove-forming edge in the bottom side gives way more readily than the second groove-forming edge in the road covering side.

**[0016]** In one embodiment of the metallised road, the joint between two consecutive road covering slabs from one side edge of the metallised road to the opposite-lying side edge of the metallised road has the shape of an arc. This makes the laying of a bend in the road all the more simple. In one design, the first side edge along the road covering side is convex and the opposite-lying side edge along the road covering side is concave. The plastic profile preferably has a flexibility which is such that it can assume the shape of the arc.

**[0017]** In one embodiment of the metallised road, the tongue-and-groove-shaped joint is semicircular. The semicircular shape allows a slight reciprocal tilt of road covering slabs in relation to the road.

**[0018]** In one embodiment of the metallised road, a cross section of the plastic profile has, in the road direction, a side which is semicircular, facing away from the first side edge.

**[0019]** In one embodiment of the metallised road, a cross section of the plastic profile has, in the road direction, a side which is trapezoidal, facing away from the first side edge. The narrowing ensures that the tongue can be more quickly positioned partially in the groove in order then to be pushed with the broader part also into the groove.

**[0020]** In one embodiment of the metallised road, a cross section of the plastic profile has, in the road direction, a side facing away from the first side edge which is triangular.

**[0021]** In one embodiment of the metallised road, the groove has a shape which matches the plastic profile.

**[0022]** The invention furthermore relates to a road covering slab comprising all of the aforementioned technical characteristics of the road covering slab.

**[0023]** The invention furthermore relates to a method for laying a metallised road comprising the following steps:

- providing road covering slabs comprising all of the technical characteristics of a road covering slab according to the invention;
- laying a first road covering slab;
- fitting a plastic profile into the groove of the first road covering slab, said profile forming a tongue to form a tongue-and-groove-shaped joint,
- laying a second road covering slab next to the first road covering slab in a tongue-and-groove-shaped joint with the first slab.

**[0024]** The invention furthermore relates to a method for maintaining a metallised road according to the invention comprising the following steps:

- laterally knocking an intermediate plastic profile out of the groove of a road covering slab,
- replacing the road covering slab, and
- laterally knocking an intermediate plastic profile into the groove of the road covering slab.

**[0025]** According to this method, maintenance on the metallised road is simpler and more economical since no breaking up is required, thereby also reducing the risk of damage to adjacent road covering slabs also.

**[0026]** It should be clear that the different aspects mentioned in this patent application can be combined and each can be taken separately into consideration for a divisional patent application.

## BRIEF DESCRIPTION OF THE FIGURES

**[0027]** These and other aspects, characteristics and advantages of the invention are explained in detail on the basis of the following description, with reference to the drawings, in which the same reference numbers designate the same or comparable parts, and wherein:

Figure 1 shows schematically a side view of a first embodiment of a metallised road according to the invention;

Figure 2 shows schematically a part of the design from Figure 1;

## DESCRIPTION OF THE FIGURES

**[0028]** Figure 1 shows schematically a side view in cross section of a first embodiment of a metallised road 1 according to the invention; Figure 2 shows schematically a part of the design from Figure 1. In the description below, reference is made to both Figures 1 and 2.

**[0029]** A metallised road 1 with a road direction is shown. The metallised road is constructed from road covering slabs 2, 3 following one another in the road direction. The metallised road 1 may be a cycle path or footpath, but the metallised road according to the invention is not limited to these types of roads. The metallised road 1 consists of consecutive separate road covering slabs 2, 3. The road covering slabs 2, 3 are preferably made from concrete, but can also be made from other materials which are suitable for the manufacture of a road covering slab 2, 3.

**[0030]** A plastic profile 4 for joining adjacent road covering slabs 4 lies between consecutive road covering slabs 2, 3. The plastic profile accommodates expansion and prevents reciprocal subsidence of the road covering slabs 2, 3. The plastic profile 4 extends here over the width of the metallised road 1. The two consecutive road covering slabs 2, 3 are provided on the opposite-lying ends 5, 6 with a respective groove 7 for the partial accommodation therein of the plastic profile 4. The plastic profile 4 extends into the respective groove 7 to form a tongue-and-groove-shaped joint 8. This joint 8 links two consecutive road covering slabs 2, 3 in order to form the

metalled road 1.

[0031] The metalled road has a road covering side 9 and a bottom side 10 lying opposite the road covering side 9. The groove 7 is disposed between the road covering side 9 and the bottom side 10 in such a way that, if the road covering 1 is overloaded, a first groove-forming edge 12 in the bottom side 10 gives way more readily than a second groove-forming edge 11 in the road covering side 9. For this purpose, the distance here from the groove 7 to the road covering side 9 is greater than the distance from the groove 7 to the bottom side 10.

[0032] It is conceivable that the joint 8 between two consecutive road covering slabs 2, 3, from the side edge 5 of the road covering slab 2 to the opposite-lying side edge 6 of the road covering slab 3, has the shape of an arc. It is possible that a side edge 5 along the road covering side is convex, and the opposite-lying side edge 6 along the road covering side is concave. To link these road covering slabs with an arc, the tongue-and-groove-shaped joint 8 is semicircular.

[0033] A cross section surface of the plastic profile 4 has, in the road direction, a side which is trapezoidal, facing away from the first side edge. This trapezoidal shape simplifies the pivoting away of the road covering slab 2 around the plastic profile 4. The cross section of the plastic profile 4 matches that of two opposite-lying grooves 7 to form the tongue-and-groove-shaped joint 8. Shapes other than trapezoidal are furthermore conceivable, such as semicircular and triangular. It is important that the groove 7 has a shape which matches that of the plastic profile 4 in such a way that the road covering slabs 2, 3 are joined to form a road covering.

[0034] The distance from the groove 7 to the road covering side 9 is greater than the distance from the groove 7 to the bottom side 10. As a result, the part 11 of the groove edge above the groove 7 is thicker than the part 12 of the groove edge below the groove 7. In the event of excessive stresses between consecutive slabs, the part 12 of the lowermost groove edge will normally break off first and the road covering side 9 remains undamaged. In one embodiment, the part 11 has a minimum height of 2.5 cm and the part 12 a height of 1.5 cm. In a different embodiment, the part 11 has a height of 5 cm, and the part 12 a height of 2.5 cm.

[0035] During the laying of the road covering slabs 2, 3, it is important that the two side edges 5, 6 do not collide, in order to prevent damage. To do this, a spacer 13 is provided between the two side edges 5, 6, here in the road covering side of the road covering slabs. To prevent damage all the more, a bevel 14 is fitted on the side edges 5, 6, in the bottom side 10 of the road covering slabs 2, 3 to prevent contact all the more between the two road covering slabs 2, 3. Here, the spacer 13 has a width, for example 3 mm, which is such that it is possible to saw the plastic profile 4 through the middle, thus providing an additional possibility for removing a road covering slab 2, also in combination with the fact that the plastic profile 4 is a separate part.

[0036] Road covering slabs 2, 3 for a cycle path can have a width of, for example, 2 m and a length of 3-4 m.

[0037] During the execution of the methods for laying a metalled road 1, the following steps are performed:

- providing the road covering slabs 2, 3;
- laying a first road covering slab 2;
- fitting a plastic profile 4 into the groove 7 of the first road covering slab 2, said profile 4 forming a tongue to form a tongue-and-groove-shaped joint 8,
- laying a second road covering slab 3 next to the first road covering slab 2 in a tongue-and-groove-shaped joint with the first road covering slab 2.

[0038] While carrying out maintenance on the metalled road 1, the following steps are performed:

- laterally knocking an intermediate plastic profile 4 out of the groove 7 of a road covering slab 2, 3;
- replacing the road covering slab 2, 3; and
- laterally knocking an intermediate plastic profile 4 into the groove 7 of the road covering slab 2,3.

[0039] The measures described above for producing a metalled road according to the invention can obviously be implemented separately or in parallel, or in a different combination, or possibly supplemented by further measures, wherein the design will essentially depend on the field of application of the metalled road and the material used. The invention is not limited to the embodiments illustrated. Modifications can be made without deviating from the inventive concept.

## Claims

1. Metalled road (1) with a road direction and constructed from road covering slabs (2, 3) following one another in the road direction and plastic profiles (4) lying between consecutive road covering slabs, wherein the two consecutive road covering slabs are provided on their opposite-lying ends (5, 6) with a respective groove (7), and wherein the plastic profile extends into the respective grooves to form a tongue-and-groove-shaped joint (8), said joint linking two consecutive road covering slabs to form the metalled road.
2. Metalled road according to Claim 1, comprising a road covering side (9) and a bottom side (10) lying opposite the road covering side, **characterised in that** the groove is disposed between the road covering side and the bottom side in such a way that a first groove-forming edge (12) in the bottom side gives way more readily than a second groove-forming edge (11) in the road covering side.
3. Metalled road according to Claim 2, wherein the dis-

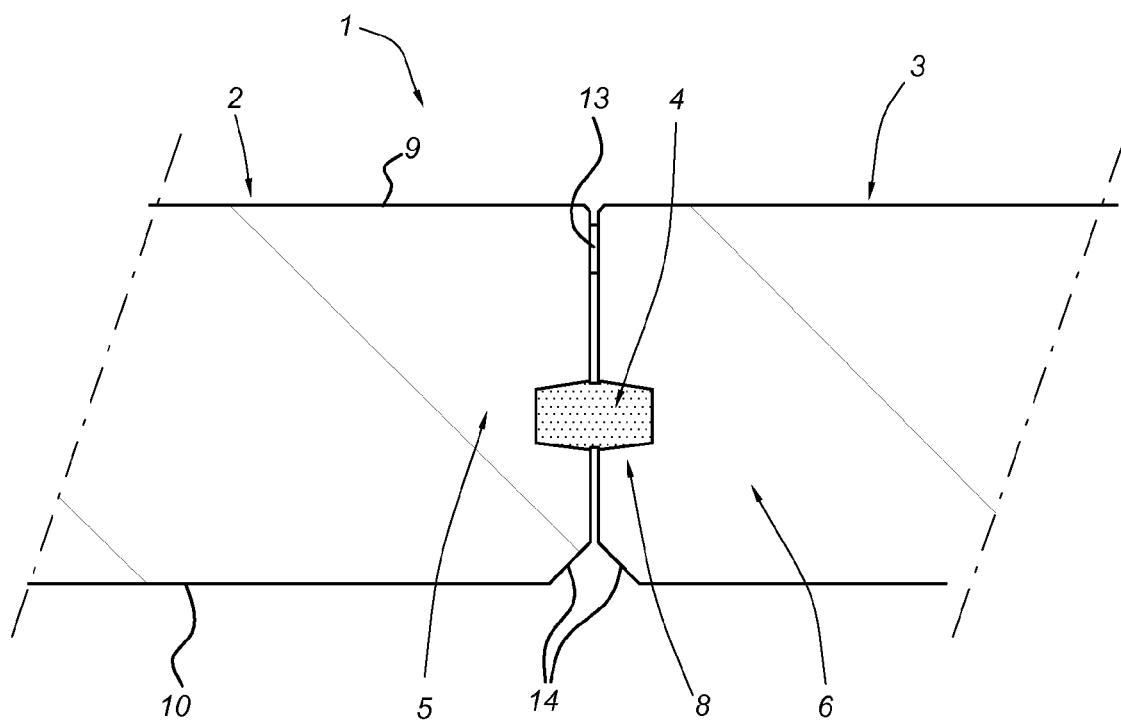
tance from the groove to the road covering side is greater than the distance from the groove to the bottom side.

4. Metalled road according to one of the preceding claims, **characterised in that** the joint between two consecutive road covering slabs from a side edge (5) of the metalled road to the opposite-lying side edge (6) of the metalled road has the shape of an arc. 5  
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5. Metalled road according to Claim 4, **characterised in that** the first side edge along the road covering side is convex, and the opposite-lying side edge along the road covering side is concave. 15
6. Metalled road according to one of Claims 4-5, **characterised in that** the tongue-and-groove-shaped joint is semicircular. 20
7. Metalled road according to one of Claims 1-7, **characterised in that** a cross section of the plastic profile, in the road direction, has a side which is semicircular, facing away from the first side edge. 25
8. Metalled road according to one of Claims 1-6, **characterised in that** a cross section of the plastic profile, in the road direction, has a side which is trapezoidal, facing away from the first side edge. 30
9. Metalled road according to one of Claims 1-6, **characterised in that** a cross section of the plastic profile, in the road direction, has a side which is triangular, facing away from the first side edge. 35
10. Metalled road according to one of the preceding claims, **characterised in that** the groove has a shape which matches the plastic profile. 40
11. Road covering slab comprising all of the technical characteristics of a road covering slab specified in one of Claims 1-10. 45
12. Method for laying a metalled road, comprising the following steps: 50
  - providing road covering slabs comprising all of the technical characteristics of a road covering slab specified in one of Claims 1-10.
  - laying a first road covering slab;
  - fitting a plastic profile into the groove of the first road covering slab, said profile forming a tongue to form a tongue-and-groove-shaped joint,
  - laying a second road covering slab next to the first road covering slab in a tongue-and-groove-shaped joint with the first slab. 55
13. Method for maintaining a metalled road according to a preceding Claim 1-11, comprising the following

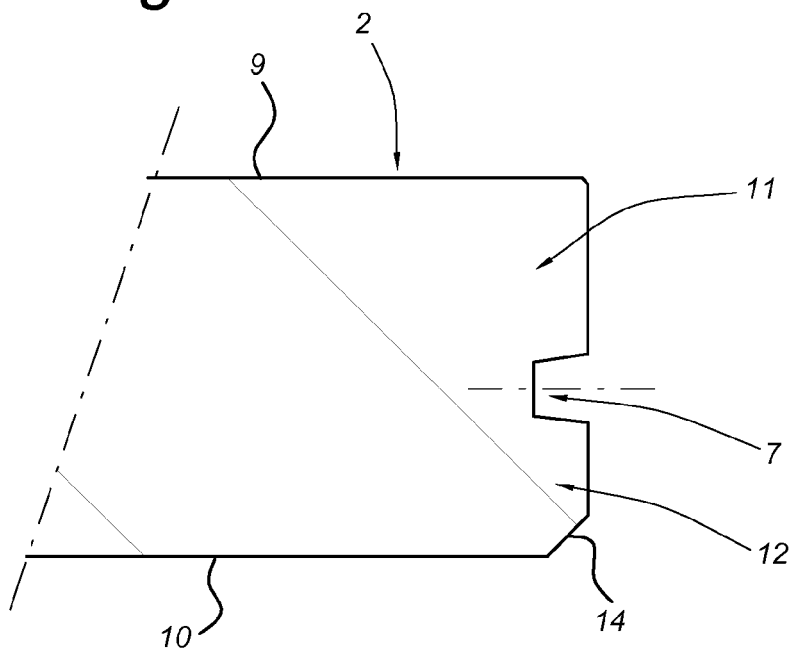
steps:

- laterally knocking an intermediate plastic profile out of the groove of a road covering slab,
- replacing the road covering slab, and
- laterally knocking an intermediate plastic profile into the groove of the road covering slab.

**Fig 1**



**Fig 2**



**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- NL 2003976 [0003]
- FR 2808292 [0004]
- FR 1311690 [0005]
- GB 2128665 A [0006]
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