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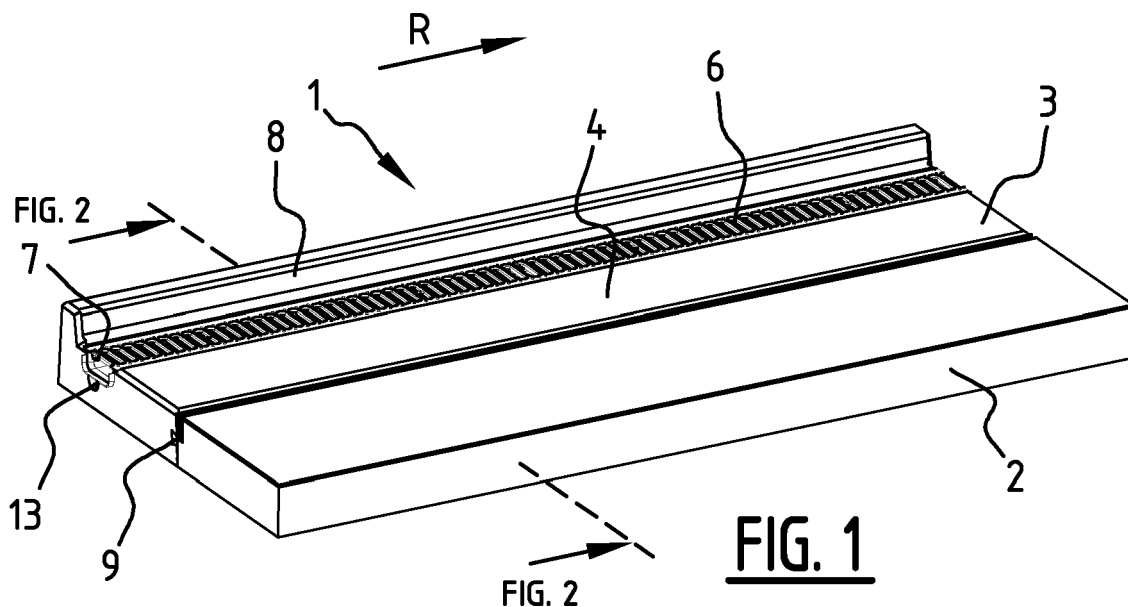
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(54) **DAM SLAB FOR DAMMING A SPORTS FIELD, METHOD FOR INSTALLING AND DAMMING A SPORTS FIELD AND METHOD FOR MANUFACTURING A DAM SLAB FOR DAMMING A SPORTS FIELD**

(57) Dam slab (1) for damming a sports field (2), with a main body (3), wherein the main body further comprises a drainage gutter (6), a barrier (8) and an attaching strip (9), by means of which attaching strip at least a part of

the sports field can be connected to the dam slab. a method for installing and damming a sports field; and a method for manufacturing a dam slab.



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Description

[0001] The invention relates to a dam slab for damming a sports field.

[0002] Sports fields, particularly with an artificial turf layer which can be played on, are generally provided with a filler material, referred to in practice as infill. In some cases the filler material is not biodegradable, or is even harmful to the environment. For this reason the filler material must be prevented from leaving the field and for instance ending up in the natural environment near the sports field. In addition, use of a so-called infill or non-infill field, for instance with an artificial turf layer, creates small plastic particles because such fields are worn down when the field is played on. These small plastic particles, called microplastics, must likewise be prevented from leaving the sports field they are also non-degradable and/or can also be harmful. The microplastics are a problem all the more because artificial turf fields generally slope downward from the centre toward the edge in order to enhance drainage. Microplastics are thereby entrained with water running off the field, to a location outside the field.

[0003] It is an object of the invention to reduce or even completely eliminate the amount of filler material and/or microplastics leaving the sports field.

[0004] The invention provides for this purpose a dam slab for damming a sports field, comprising a main body configured to be arranged adjacently of the sports field, wherein the main body comprises an upper surface and a sports field side, wherein the main body is configured to be arranged in normal use with the upper surface directed upward and with the sports field side directed toward the sports field and thus defines a first direction running substantially horizontally along the sports field, wherein the main body further comprises a drainage gutter in the upper surface for the purpose of draining water which runs from the sports field onto the dam slab, a barrier arranged on the upper surface for the purpose of guiding water running from the sports field onto the dam slab into the drainage gutter, and at least one attaching strip on the sports field side, by means of which at least a part of the sports field can be connected to the dam slab.

[0005] The main body can be configured to be placed directly adjacently of the sports field, for instance between the sports field and for instance a fence, irrespective of whether the sports field is of the infill or non-infill type. Directly can here particularly be understood to mean that the dam slab is connected to the field, and nothing other than components bringing about this connection is situated between the dam slab and the sports field.

[0006] The dam slab can be connected to a part of the sports field by means of the attaching strip. Water running from the sports field can thereby make its way onto the dam slab. Because the water may contain filler material and/or microplastics, it is important to catch the water. For this purpose the dam slab is provided with a drainage

gutter. The water is thereby collected and guided downstream. From the drainage gutter, the water can for instance be filtered in order to remove filler material and/or microplastics from the water. The water can then be discharged without harmful consequences for for instance the environment. The filtered filler material and/or the microplastics can be reused, recycled or otherwise disposed of. In order to prevent water from escaping from the drainage gutter, and thereby not being caught wholly or at all, the dam slab is provided with a barrier which guides the water to the drainage gutter. Water can hereby be prevented at least partially from escaping. The attaching strip is further important for the invention because the sports field can be connected to the dam slab by means thereof. It is important to connect the sports field to the dam slab because water, and so microplastics, can thus be prevented at least partially from running off between the sports field and the dam slab. Different types of sports field require different methods of attachment to the dam slab. In some cases use is made of a clamping strip which must be attached to the dam slab and has a clamping mechanism for holding a part of the sports field. The design of the clamping strip can differ per type of sports field. The use of an attaching strip, to which a part of the sports field can be attached, can be particularly advantageous because the relatively great length of the attaching strip creates a larger area in which a clamping strip can be connected to the dam slab. This is because the attaching strip can allow attachment of a clamping strip over at least a part of its length, whereby it is not necessary to align the clamping strip and/or optional fixation means such as screws or bolts. This can save a lot of time during installation of a dammed sports field. The attaching strip can likewise ensure that pre-drilling of holes in the dam slab is not necessary, which can likewise save time. It is also noted that when pre-drilled holes are provided, fixation means and/or the clamping strip must be aligned therewith, which once again can take up a lot of time during installation.

[0007] The main body being configured to be arranged adjacently of a sports field can here be understood to mean that the main body has a side edge, i.e. said sports field side. In this way the main body can be arranged adjacently of a sports field, while the sports field side is directed toward the sports field.

[0008] The sports field side of the main body can be substantially flat. The sports field side particularly lies substantially perpendicularly of a main plane of the dam slab. The main plane is formed by the upper surface. In normal use the dam slab can be arranged horizontally, i.e. with its main plane horizontally and optionally with the sports field side vertically. It is noted that a dam slab with an upper surface and a side lying substantially perpendicularly thereof, for instance said sports field side, can be arranged adjacently of a sports field.

[0009] In an embodiment of the dam slab the drainage gutter, the barrier and the attaching strip can be combined in one integral slab.

[0010] In summary, the use of an attaching strip can be advantageous in that the attaching strip has at least a longitudinal direction, along which multiple positions can be allocated at which a clamping strip can for instance be attached to the dam slab. This advantage can be deployed most effectively when the dam slab also has a drainage gutter and/or a barrier. This is because water is thereby unable to run off between for instance the attaching strip and the drainage gutter, because they form part of the same dam slab. Because the drainage gutter and/or barrier are combined with the attaching strip, only one connecting seam is necessary, namely between the sports field and the dam slab. This limits the possibility of water escaping.

[0011] It is however also possible to envisage providing a dam slab without barrier and/or without drainage gutter. Owing to the at least one attaching strip, such a dam slab can still provide the advantage of simple attachment of for instance a clamping strip.

[0012] Instead of an attaching strip, use can also be made of another attaching element, for instance a plug. In that case it is particularly advantageous for the attaching element to be received at least partially integrally in the main body of the dam slab. When the main body is cast during production, as would be the case if the dam slab is manufactured from concrete, such a connection can be obtained by casting in the attaching element with the main body. Techniques for casting elements in with for instance concrete are known to the skilled person. By casting in the attaching element it is not necessary during installation of a sports field to pre-drill and/or measure, since the attaching elements have then already been placed in the main body. It is of course also possible to cast in an attaching strip as described above with the main body.

[0013] Although the first direction has been defined above on the basis of the sports field, the first direction could also be defined on the basis of the dam slab itself. This is because the first direction runs substantially parallel to the sports field side and substantially parallel to the upper surface. It is foreseeable that dam slabs will be given an elongate form in practice, wherein the longitudinal direction of the dam slab corresponds with the first direction. This is because, owing to the elongate form of the dam slab, fewer dam slabs need be provided along the sports field of a determined length.

[0014] In an embodiment of the dam slab according to the invention the at least one attaching strip extends substantially in the first direction.

[0015] In this embodiment the attaching strip runs along the sports field in use of the dam slab. Particularly effective use can hereby be made of the length of the attaching strip for attaching for instance a clamping strip, because the necessary clearance is relatively great in this direction.

[0016] It is also noted here that the attaching strip can extend with its longitudinal direction substantially in said first direction.

[0017] In another embodiment of the dam slab according to the invention the at least one attaching strip is received at least partially in a corresponding recess in the main body.

[0018] By receiving the attaching strip at least partially in the main body a sufficiently strong connection can be made between the attaching strip and the main body.

[0019] When the main body is manufactured from a pourable and/or castable material, the at least one attaching strip can be poured and/or cast in with the main body.

[0020] A sufficiently strong connection can hereby be made between the attaching strip and the main body. This can also prevent the main body from having to be subjected to a further process, such as drilling.

[0021] The recess can particularly be opened toward the sports field side.

[0022] A clamping strip can hereby for instance be attached to the sports field side in relatively simple manner.

[0023] The recess can further have a non-releasable form. This can prevent the attaching strip from separating from the main body after or during installation of the sports field.

[0024] In yet another embodiment of the dam slab according to the invention the attaching strip extends along at least almost the whole main body.

[0025] A connection can hereby be made via the attaching strip to the main body along at least almost the whole length of the main body.

[0026] In yet another embodiment of the dam slab according to the invention the at least one attaching strip is manufactured from plastic. These materials can provide the advantage that they are sufficiently sturdy for screwing into, without the need for pre-drilling and/or the use of a plug. A clamping strip can therefore for instance be attached to the main body simply by screwing a self-drilling screw into the attaching strip.

[0027] The attaching strip can alternatively be manufactured from rubber, or from another material.

[0028] In yet another embodiment of the dam slab according to the invention the dam slab is a concrete dam slab. The dam slab is preferably a prefabricated concrete dam slab.

[0029] Such dam slabs can be used particularly well as dam slabs for sports fields because they do not wear, or hardly so, during use.

[0030] In yet another embodiment of the dam slab according to the invention the drainage gutter extends substantially parallel to the first direction.

[0031] In this embodiment the drainage gutter forms a barrier along the sports field, whereby it is impossible or difficult for water to escape from the drainage gutter.

[0032] In yet another embodiment of the dam slab according to the invention the barrier extends substantially parallel to the first direction.

[0033] In this embodiment the barrier forms a barrier along the sports field, whereby it is impossible or difficult for water to flow beyond the dam slab in a direction away

from the sports field. Water can thus end up at least largely in the drainage gutter, whether guided by the barrier or not.

[0034] In yet another embodiment of the dam slab according to the invention the drainage gutter lies closer to the sports field side than the barrier. The barrier can thus be used to guide water from the field into the drainage gutter. In other words, it can be stated that the drainage gutter lies closer to the sports field side than the barrier lies relative to the sports field side. The drainage gutter therefore lies between the sports field side and the barrier. The gutter, barrier and sports field side can be substantially parallel.

[0035] In yet another embodiment of the dam slab according to the invention the barrier connects at least almost to the drainage gutter, as seen in a direction toward the sports field side from a side of the main body opposite the sports field side.

[0036] In this embodiment there is relatively little space between the drainage gutter and the barrier. This prevents water from accumulating between the drainage gutter and the barrier. Because water that accumulates there can be carried off the sports field, for instance on the bottom of spectators' shoes, reducing the space between the drainage gutter and the barrier helps prevent water from leaving the sports field.

[0037] It is therefore also important that the space between the sports field side and the drainage gutter is sufficiently small. It is for instance possible to envisage limiting the space to a maximum of the average width and/or length of an adult's foot in order to thus ensure that no water, which could be carried off on the bottom of shoes, accumulates between the sports field side and the drainage gutter either.

[0038] In this embodiment the drainage gutter can be placed as tightly as possible against the barrier, which increases the effective height of the barrier. This is because the barrier can co-act with the depth of the drainage gutter in this way, whereby water is less easily able to flow over the barrier. This embodiment therefore provides for a damming which is for instance also relatively effective when there is wind.

[0039] In yet another embodiment of the dam slab according to the invention the barrier extends upward relative to the upper surface. The barrier hereby forms a dam over which water cannot flow, or hardly so.

[0040] In yet another embodiment of the dam slab according to the invention the dam slab further comprises at least one spacer which protrudes relative to the main body in a direction substantially parallel to the first direction of the sports field side.

[0041] A plurality of dam slabs can hereby be placed at a fixed mutual distance in relatively simple manner. This results in an intermediate space which can for instance be filled with mastic in order to thus obtain an at least almost watertight connection between dam slabs.

[0042] The invention also relates to a dammed sports field, comprising an artificial turf layer which can be

played on and a number of dam slabs which are arranged at least along a part of a periphery of the artificial turf layer and are connected thereto for catching water coming from the artificial turf layer and thus damming the sports field.

[0043] The invention also relates to a method for installing and damming a sports field, comprising the steps, to be performed in any suitable sequence, of:

- 10 - installing at least an artificial turf layer which can be played on,
- providing a number of dam slabs, each comprising at least one attaching strip, wherein the dam slabs preferably have the above described characteristics;
- 15 - providing at least one attaching profile for connecting the artificial turf layer which can be played on to dam slabs;
- attaching the at least one attaching profile to the dam slabs by means of the at least one attaching strip of the respective dam slabs; and
- 20 - attaching the artificial turf layer which can be played on to the attaching profile.

[0044] The attaching profile can for instance be a metal profile. Such metal profiles, also known as clamping strips, are per se known.

[0045] The attaching profile is provided along its length with a number of holes for fastening the attaching profile to the dam slab using fixation means. The attaching profile can also comprise a clamping mechanism which extends over the length of the profile. The clamping mechanism can be used to clamp an edge of an artificial turf field. By clamping the field and fastening the profile to the dam slab the artificial turf field can thus be fastened to the dam slab.

[0046] The invention also relates to a method for manufacturing a dam slab for damming a sports field, wherein the dam slabs preferably have the above stated characteristics, the method comprising the steps of:

- 40 a) providing a mould for the dam slab;
- b) arranging at least one attaching strip in the mould;
- c) pouring and/or casting a curable material in the mould with the at least one attaching strip; and
- 45 d) allowing the curable material to harden, such that the at least one attaching strip is incorporated at least partially in a corresponding recess in a main body of the dam slab.

50 **[0047]** The dam slabs of the dammed sports field, and the above stated method, can be the above-described dam slabs, for instance with one or more of the drainage gutter, barrier and attaching strip. The dam slabs can have any of the above stated characteristics, alone or in combination, and can therefore provide the associated advantages.

[0048] The invention will be further elucidated on the basis of the accompanying figures, in which:

Figure 1 shows a schematic perspective view of an embodiment of the dam slab according to the invention, together with a part of a sports field;

Figure 2 shows schematically a cross-section of the dam slab and the sports field of figure 1; and

Figures 3A and 3B show a detail of the cross-section of figure 2, respectively before and after attachment of a clamping strip to the dam slab by means of the attaching strip.

[0049] The same elements are always designated in the figures with the same reference numerals.

[0050] Figures 1-3B show a prefabricated concrete dam slab 1 for damming a sports field 2. Dam slab 1 comprises a main body 3. Figures 1 and 2 show that dam slab 1 is arranged with its main body 3 adjacently of sports field 2. The main body 3 has an upper surface 4 and a sports field side 5. In use the upper surface 4 is directed upward and sports field side 5 toward sports field 2. A drainage gutter 6 is arranged in upper surface 4. Drainage gutter 6 is in this case closed off by a grate 7. Grate 7 allows water to pass through so that drainage gutter 6 can fill up. Drainage gutter 6 runs in the longitudinal direction of dam slab 1. The longitudinal direction runs parallel to the sports field and is therefore parallel to a first direction R, which is parallel to the upper surface 4 and the sports field side 5. Drainage gutter 6 is used to receive water from the sports field and to discharge it to for instance a filter (not shown). Dam slab 1 further has a barrier 8 which extends upward relative to upper surface 4. Barrier 8 also extends in the first direction R. Barrier 8 thus prevents water from flowing over dam slab 8, and guides the water into drainage gutter 6. In the shown embodiment barrier 8 connects to drainage gutter 6, whereby there is almost no upper surface 4 between them. Drainage gutter 6 lies closer to the sports field side 5 than barrier 8, whereby water running from sports field 2 onto dam slab 1 is blocked by the barrier and is guided into the drainage gutter.

[0051] Dam slab 1 further has an attaching strip 9 on sports field side 5. Attaching strip 9 can be used to attach a part of a sports field to dam slab 1. In the shown embodiment attaching strip 9 extends in the first direction R, substantially along the whole length of dam slab 1. As can be seen most clearly in figures 3A and 3B, attaching strip 9 is received in a recess in main body 3. The recess opens toward sports field side 5. The part of sports field 2 can thereby be attached against the sports field side 5. The recess has in this case a trapezoidal cross-section, which is not releasable. This means that the cross-section is smaller at its open end than at its closed end. In this embodiment attaching strip 9 is arranged in the main body by placing it in a mould and casting it in with the main body in this way. The non-releasable form of the recess makes it impossible or difficult for attaching strip 9 to leave the recess. In this embodiment attaching strip 9 is made of rubber. Other materials, such as plastic, can of course also be envisaged.

[0052] In order to attach a part of a sports field 2 to dam slab 1 a clamping strip 10 can for instance be attached to dam slab 1. Such clamping strips 10 can for instance be fastened directly onto attaching strip 9 by means of screws 11. Because attaching strip 9 has an elongate form, screws 11 can be fastened at several positions along the length of attaching strip 9. The positions of screws 11 need hereby not be determined by for instance measuring. It is also unnecessary to pre-drill in attaching strip 9, and the use of plugs is redundant. As can be seen most clearly in figure 2, sports field 2 has an artificial turf layer 12 which can be played on. Artificial turf layer 12 is clamped in clamping strip 10 and thereby attached to dam slab 1 via the attaching strip 9 thereof.

[0053] Dam slab 1 further has a spacer 13 which protrudes relative to the plane of the end surface of dam slab 1. This makes it possible to keep a distance to an adjacent dam slab 1.

[0054] Although the invention is elucidated above on the basis of a number of specific examples and embodiments, the invention is not limited thereto. The invention instead also covers the subject-matter defined by the following claims.

Claims

1. Dam slab for damming a sports field, comprising a main body configured to be arranged adjacently of the sports field, wherein the main body comprises:

- an upper surface; and
- a sports field side;

wherein the main body is configured to be arranged in normal use with the upper surface directed upward and with the sports field side directed toward the sports field and thus defines a first direction running substantially horizontally along the sports field, wherein the main body further comprises:

- a drainage gutter in the upper surface for the purpose of draining water which runs from the sports field onto the dam slab,
- a barrier arranged on the upper surface for the purpose of guiding water running from the sports field onto the dam slab into the drainage gutter; and
- at least one attaching strip on the sports field side, by means of which at least a part of the sports field can be connected to the dam slab.

2. Dam slab according to claim 1, wherein the at least one attaching strip extends substantially in the first direction.

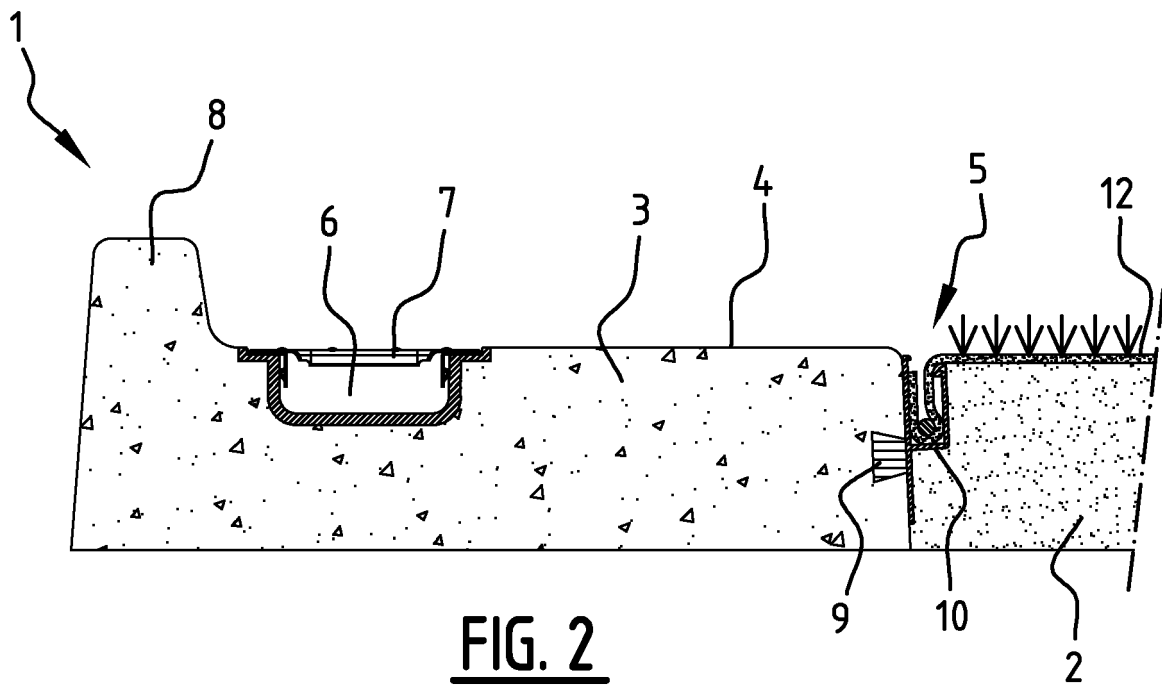
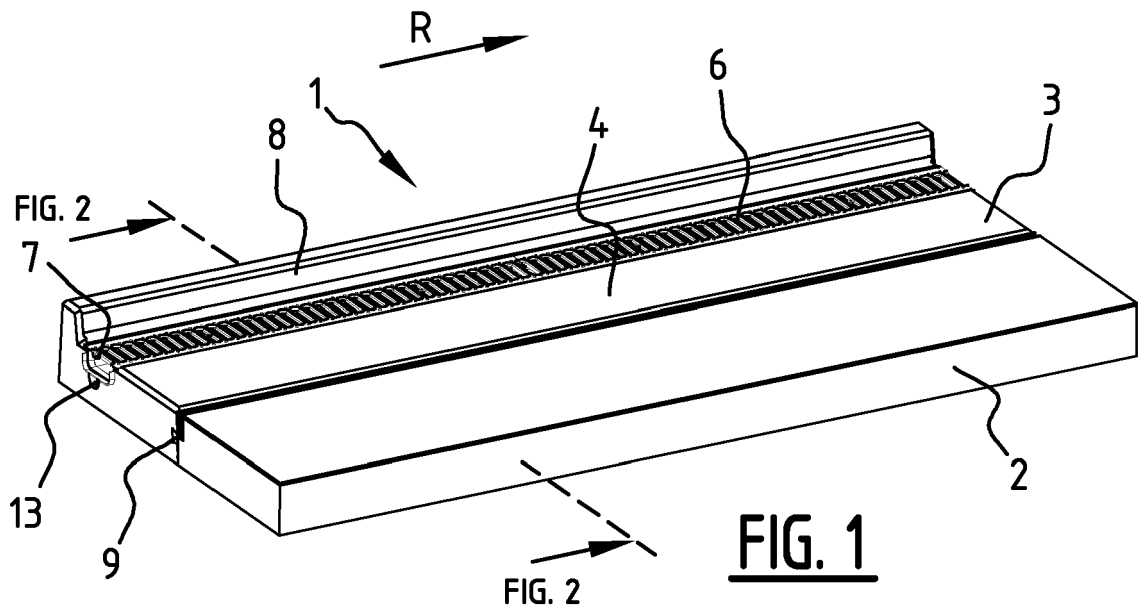
3. Dam slab according to at least one of the foregoing claims, wherein the at least one attaching strip is

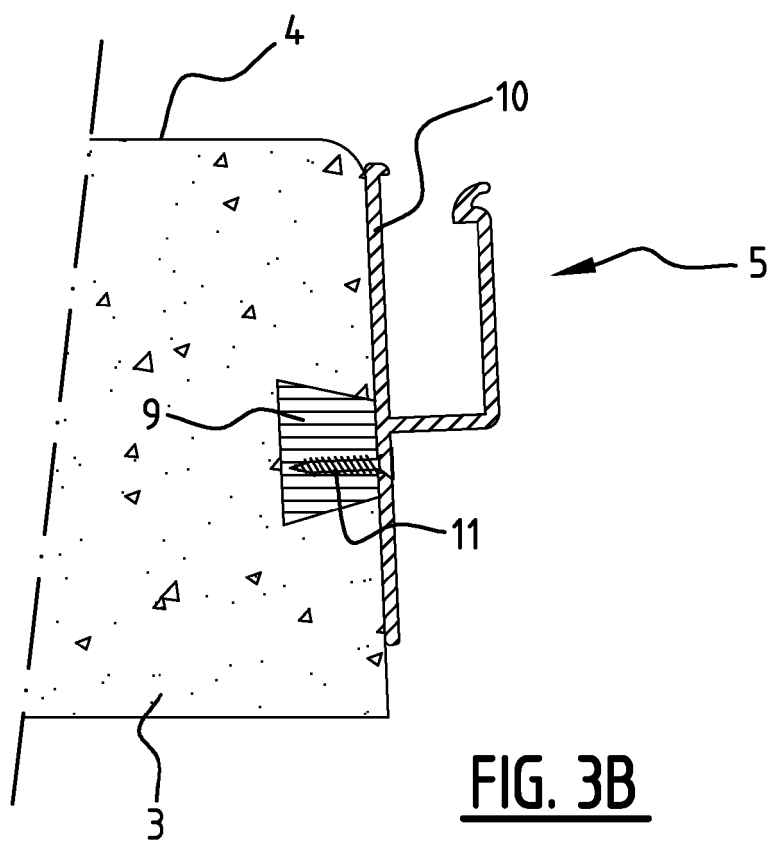
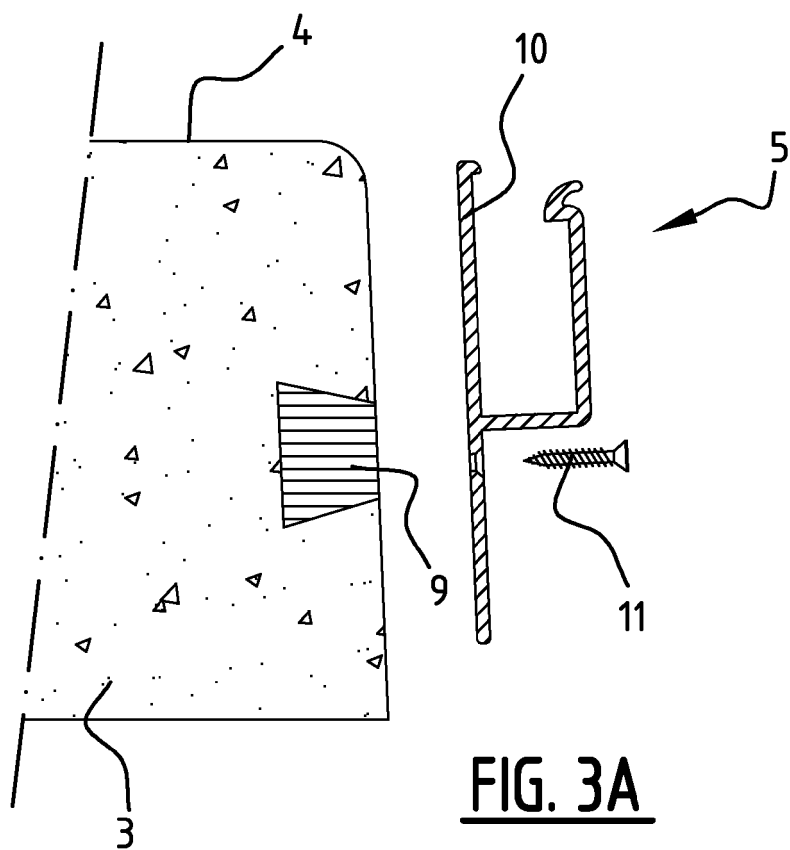
received at least partially in a corresponding recess in the main body.

4. Dam slab according to claim 3, wherein the main body is manufactured from a pourable and/or castable material, and the at least one attaching strip can be poured and/or cast in with the main body. 5
5. Dam slab according to claim 3 or 4, wherein the recess is opened toward the sports field side. 10
6. Dam slab according to at least one of the claims 3-5, wherein the recess has a non-releasable form, wherein the attaching strip preferably extends along at least almost the whole main body. 15
7. Dam slab according to at least one of the foregoing claims, wherein the at least one attaching strip is manufactured from plastic, and/or wherein the dam slab is a concrete dam slab, and preferably a prefab concrete dam slab. 20
8. Dam slab according to at least one of the foregoing claims, wherein the drainage gutter extends substantially parallel to the first direction, and/or wherein the barrier extends substantially parallel to the first direction. 25
9. Dam slab according to at least one of the foregoing claims, wherein the drainage gutter lies closer to the sports field side than the barrier. 30
10. Dam slab according to at least one of the foregoing claims, wherein the barrier connects at least almost to the drainage gutter, as seen in a direction toward the sports field side from a side of the main body opposite the sports field side. 35
11. Dam slab according to at least one of the foregoing claims, wherein the barrier extends upward relative to the upper surface. 40
12. Dam slab according to at least one of the foregoing claims, further comprising at least one spacer which protrudes relative to the main body in a direction substantially parallel to the first direction of the sports field side. 45
13. Dammed sports field, comprising an artificial turf layer which can be played on and a number of dam slabs according to at least one of the foregoing claims which are arranged at least along a part of a periphery of the artificial turf layer and are connected thereto for catching water coming from the artificial turf layer and thus damming the sports field. 50
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14. Method for installing and damming a sports field, comprising the steps, to be performed in any suitable

sequence, of:

- installing at least an artificial turf layer which can be played on,
 - providing a number of dam slabs, each comprising at least one attaching strip, wherein the dam slabs are preferably embodied as according to at least one of the claims 1-12;
 - providing at least one attaching profile for connecting the artificial turf layer which can be played on to dam slabs;
 - attaching the at least one attaching profile to the dam slabs by means of the at least one attaching strip of the respective dam slabs; and
 - attaching the artificial turf layer which can be played on to the attaching profile.
15. Method for manufacturing a dam slab for damming a sports field, preferably according to at least one of the claims 1-12, comprising the steps of:
- a) providing a mould for the dam slab;
 - b) arranging at least one attaching strip in the mould;
 - c) pouring and/or casting a curable material in the mould with the at least one attaching strip; and
 - d) allowing the curable material to harden, such that the at least one attaching strip is incorporated at least partially in a corresponding recess in a main body of the dam slab.







EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	KR 101 963 429 B1 (DONG SUNG ENG LTD [KR]; BIN TECH KOREA CO LTD [KR]) 4 April 2019 (2019-04-04) * figure 4 * * the whole document *	1-14	INV. E01C13/00 E01C11/22 E01C13/08
X	US 6 234 711 B1 (BEAMAN DONALD B [US]) 22 May 2001 (2001-05-22) * figures 1-14 * * the whole document *	1,3-15	
A	AU 2008 201 960 A1 (PHILLIP THOMAS) 19 November 2009 (2009-11-19) * figure 1 * * the whole document *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			E01C
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 25 June 2021	Examiner Klein, A
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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25-06-2021

10	Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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	US 6234711	B1	22-05-2001	NONE
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