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(54) **A device for catching leakage liquids**

Eine Vorrichtung für das Auffangen von Leckflüssigkeiten

Dispositif pour capter un liquide de fuite

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Description

[0001] The invention relates to a device provided with a trough for catching leaking liquids.

[0002] The invention furthermore relates to a parking plate for a vehicle provided with such a device.

[0003] A device for catching leaking liquids is known from FR-A-2 659 096.

[0004] Vehicles, for example cars or buses, as well as machines often leak oily and/or greasy liquids, which are absorbed by the ground on which said vehicles and/or machines stand, which results in contamination of said ground. To purify the contaminated ground the soil must be removed and be transported to processing companies, which is a relatively costly process. Furthermore there is a risk of the liquids finding their way into the ground water and thus being spread over a large area.

[0005] The drawback of liquid-tight concrete plates that are commercially available is that when they are used in the open air the liquids are washed off the concrete plate after a rain shower, thus contaminating the soil and the ground water as yet.

[0006] The object of the invention is to provide a device for catching leakage liquids with which the leakage liquids are caught in a reliable manner without any contamination of the soil.

[0007] This objective is achieved with the device according to the invention in that the device is provided with a grid detachably connected with said trough, by means of which the trough can be closed, and a water-repellent, leakage liquid-absorbing material positioned between said grid and said trough.

[0008] The device is installed in the ground at the location of a liquid-leaking machine or in the ground of a parking space for a vehicle. The leakage liquid falls through the grid on to the absorbent material, which absorbs the liquids which are harmful to the environment, for example oily and greasy liquids, and which repels water. The presence of the trough prevents the contaminated liquid from finding its way into the ground. When the absorbent material is saturated, it is replaced by clean absorbent material and the contaminated absorbent material is discharged to a processing company. Thus all contaminating liquids are concentrated in the absorbent material and only a relatively small volume needs to be transported to a processing company.

[0009] Market research has shown that in the Netherlands alone there are some 17,000,000 parking spaces for cars, where leaking cars that are parked there contaminate the soil. The device according to the invention makes it possible to prevent contamination of the soil and the ground water by the leakage liquids and to catch the leakage liquids in a reliable and safe manner.

[0010] One embodiment of a device according to the invention is characterized in that the absorbent material is present in the trough in the form of a cloth.

[0011] This makes it possible to remove the absorbent material from the trough and replace it in a simple

manner.

[0012] Another embodiment of a device according to the invention is characterized in that said trough is provided with a bottom, which comprises at least one water discharge channel.

[0013] The clean water repelled by the absorbent material is discharged from the trough through the water discharge channel. Also rain water is discharged through the water discharge channel.

[0014] Yet another embodiment according to the invention is characterized in that said water discharge channel is located in a relatively elevated part of said bottom.

[0015] If the water which has flown through the absorbent material should nevertheless contain any residual leakage liquids, such as oils or greases, said residual leakage liquids will tend to float on the water under the absorbent material. The water will not be able to leave the trough before the water level inside the trough has risen to a level where the water can flow out through the elevated water discharge channel. When the water level rises the residual leakage liquids present on the water will likewise rise. The leakage liquids are pressed against the bottom side of the absorbent material and caught by the absorbent material as yet.

[0016] Another embodiment according to the invention is characterized in that said water discharge channel is located in a relatively lower part of said bottom.

[0017] As a result of this all the water present inside the trough will flow to the lower part, where it is discharged through the water discharge channel. Thus no water will remain inside the trough.

[0018] Yet another embodiment of the device according to the invention is characterized in that said water discharge channel is located in the centre of the trough.

[0019] The water leaves the trough via the centre, as a result of which only one water discharge channel is required.

[0020] Yet another embodiment of a device according to the invention is characterized in that water discharge channels are located on either side of the trough.

[0021] Since said water discharge channels are located near the edges of the trough, the part located between the edges on the trough has a continuous, flat appearance.

[0022] Yet another embodiment of a device according to the invention is characterized in that said water discharge channel is provided with a powdered or granular absorbent material.

[0023] The liquid inside the trough will flow to the water discharge channel, where the water leaves the trough via the water discharge channel and harmful substances are caught by the absorbent material. Because of the powdered or granular form of the absorbent material the entire water discharge channel can be filled with absorbent material and no liquid can leave the trough without having been in contact with said absorbent material.

[0024] Yet another embodiment of a device according to the invention is characterized in that the grid can be locked to the trough.

[0025] As a result of this the grid can only be removed by authorized personnel in order for the contaminated absorbent material to be replaced by clean absorbent material. Removal of the grid by unauthorized persons is made impossible, as a result of which unsafe situations of a trough lying open cannot occur when the device is for example being used as a parking space.

[0026] The invention furthermore relates to a parking plate for a vehicle, whereby the soil pollution problems of the known parking spaces are prevented. This objective is achieved with a parking plate for a vehicle, which parking plate is provided with at least one device according to the invention.

[0027] The entire parking plate may be provided with a device according to the invention. It is more effective, however, to provide the parking plate with a device according to the invention only in those places where a liquid-leaking part of a vehicle to be parked is expected to be present. This will be near the engine and near the exhaust of the vehicle.

[0028] One embodiment of the parking plate according to the invention is characterized in that the parking space is provided with at least one plate supporting the vehicle to be parked, which plate comprises the device for catching the leakage liquids.

[0029] The plate and the device according to the invention together form a unit which can be provided at a random location so as to create a parking space.

[0030] The invention will be explained in more detail hereafter with reference to the drawing, in which:

Figure 1 is a perspective view of a parking plate according to the invention;

Figures 2 and 3 are perspective views of details of the parking plate shown in Figure 1;

Figure 4 is a cross-sectional view of the parking plate shown in Figure 1;

Figure 5 is a side view of the parking plate shown in Figure 1, with a car parked thereon;

Figure 6 is a cut-away view of a device according to the invention;

Figure 7 is a perspective view of another embodiment of a device according to the invention;

Figures 8 and 9 are cross-sectional views of details of the device shown in Figure 7;

Figure 10 is an exploded perspective view of another embodiment of a device according to the invention; and

Figure 11 shows a trough of the device shown in Figure 10.

[0031] In the Figures like parts are numbered alike.

[0032] Figure 1 shows an embodiment of a parking plate according to the invention, which is provided with two flat, mirror-symmetrically disposed identical con-

crete plates 2, which are each provided with a device 3 for catching leakage liquids according to the invention. The position of the devices 3 with respect to the parking plate has been selected such that the devices 3 are located at those places where a vehicle parked on the parking plate 1 is expected to leak harmful liquids, such as oils and/or greases. Usually this will be near the exhaust and near the engine of the vehicle. Each device 3 is provided with a metal grid 4, which is disposed in a lowered portion of the plate 2, in such a manner that a substantially flat appearance of the plate is retained. The grid 4 closes a trough containing a water-repellent, leakage liquid-absorbing material. This will be explained in more detail hereafter.

[0033] Figure 2 is a clear view of the grid 4 of the device 3 shown in Figure 1.

[0034] Figure 3 shows a lock means 5 provided in the concrete plate 2, with which the grid 4 can be locked to the concrete plate in order to prevent the grid 4 and/or the absorbent material from being undesirably removed. The lock means 5 comprises a pin 6, which is capable of sliding movement within a slot provided in the grid 4. Rotation of the lock means 5 in the direction of the arrow 8 will cause the pin 6 to move out of the slot 7, after which the grid 4 can be removed so as to replace the absorbent material.

[0035] Figure 4 is a cross-sectional view along the line IV-IV in Figure 1, wherein the grid 4 has been left out for easy reference. The parking plate 1 comprises the concrete plate 2 and a trough 9 of plastic material, which is positioned in a lowered portion of the concrete plate 2. The thin-walled plastic trough 9 is provided with a bottom plate 10, which slopes down from the centre towards the sides of the trough 9, as a result of which leakage liquids falling into the trough will flow to the sides of the trough. Near its sides the bottom plate 10 of the trough 9 is provided with water discharge channels 11, which are connected to discharge channels 12 in the concrete plate 2. Liquid can only leave the trough via the discharge channels 11, 12.

[0036] A cloth 13 of a water-repellent, leakage liquid-absorbing material is located inside the trough 9, and a powdered absorbent material is located within the discharge channels 11, 12. Leakage liquids from a parked vehicle fall through the grid 4 on to the absorbent cloth 13. Water is repelled by the cloth 13 and separated from the harmful oily and greasy constituents of the leakage liquids. Then the water flows to the discharge channels 11, 12 under the influence of gravity, where it disappears through the powdered or granular absorbent material 14 into the ground 15. The powdered or granular material 14 provides an extra filtration of the water already purified by the cloth 13, as a result of which any residual harmful liquids are removed as yet.

[0037] The cloth 13 may be made of an absorbent material, such as OIL-DRI-MARINE (trademark), which is supplied by Anlag International B.V. of Lunteren. The powder 14 may be OIL-DRI (trademark) CHEM-SORB

powder, for example, which is supplied by the same company. This OIL-DRI (trademark) absorbent material comprises polypropylene. the absorbent materials referred to above are also supplied by Bosco B.V. of Sneek under other brand names.

[0038] When the cloth 13 or the powder or the grains 14 is/are saturated, it/they need to be replaced by new absorbent material.

[0039] Figure 5 is a side view of a car 16, which is parked on a parking plate 1 according to the invention. The car 16 comprises an engine 17 and an exhaust 18, from which harmful liquids 19 may leak. The liquids 19 are caught by the devices 3 positioned under the engine 17 and the exhaust 18.

[0040] Figure 6 is a cut-away view of a device 3 according to the invention. The trough 9 is made of liquid-tight concrete, whereby the bottom 10 of the trough 9 slopes down towards the edges. Near the edges, which are reinforced by means of metal sections 20, elongated discharge channels 12 are provided in the concrete plate 9. The metal sections 20 are provided with corresponding discharge channels 11. Absorbent cloths 13 are provided in the trough 9 and in the discharge channels 12, after which the trough 9 is closed by means of the grid 4. The leakage liquids flow in the direction of the arrow 23 through the grid 4 and the cloths 13 to the discharge channels 12, where the liquids purified by the absorbent cloths 13 disappear into the ground 15 located under the trough 9.

[0041] Figures 7 - 9 show another embodiment of a device 3 according to the invention, wherein the trough 9 made of metal plates is provided with a water discharge channel 11 located in the centre of the trough 9, which is positioned lower than the edges of the trough 9.

[0042] Figure 8 is a cross-sectional view of the device 3, along the line VIII-VIII in Figure 7, in which the bottom plate 10 sloping down from the edges towards the centre can be clearly distinguished. The edges of the trough 9 are made up of metal sections 20, which are positioned on edges of the concrete plate 2.

[0043] Figure 9 shows a detail IX of the cross-section shown in Figure 7. The trough 9 comprises a metal bottom plate 10 sloping down towards the centre, metal sections 20 and metal flanges 21, by means of which the bottom plate 10 and the sections are interconnected. A leakage liquid-absorbing cloth 13, which catches liquids leaking through the grid 4, is present on the bottom plate 10. The grid 4 is kept spaced from the cloth 13 by means of bent-over edges 22.

[0044] Figures 10 and 11 show another embodiment of a parking plate 1 and a trough 9 respectively for a such a parking plate 1. The parking plate 1 is provided with a metal trough 9, which is mounted in a concrete plate 2. The trough 9 is provided with four parallel gutters 25, which are separated from each other by upright edges 26. The upper sides 27 of the edges 26 extend parallel to an edge 28 of the trough 9. Each gutter 25 comprises two bottom surfaces 29 sloping upwards from the

edges 28 to the centre of the gutter 25. Each gutter 25 is in its centre provided with a water discharge channel 11, which, as a result the bottom surfaces 29 sloping upwards towards the centre, is located at the highest point of the gutter 25. Absorbent cloths 13 are positioned in the four gutters 25, said cloths at least abutting against edges 30 of the discharge channels 11. The trough 9 is furthermore provided with an angle section 31, a supporting structure 32 positioned therein and a cover grid 4 positioned thereon. When water contaminated with leakage liquids flows through the grid 4, the leakage liquids are caught by the absorbent cloths 13 and the purified water flows through the cloths 13 into the gutters 25. If the water should nevertheless contain any residual leakage liquids, the residual leakage liquids are caught via the bottom sides of the cloths 13 directed towards the gutters 25, since the water inside the gutters 25 will rise until the water level has reached the level of the discharge channel 11. The leakage liquids floating on the water are thereby pressed against the bottom sides of the cloths 13 and absorbed by the cloths as yet.

[0045] The parking plate 1 is dimensioned 5 x 2.5 m, for example, with a thickness of 15 cm. The size of the grid will for example be 1 x 1.25 m. When the parking plate is used for lorries or buses, the dimensions will have to be larger.

[0046] The grid 4 may be made of metal or plastic material. The grid has a porosity of 20%, for example, and apertures of 6 x 20 mm.

[0047] The absorbent material may for example be made of polypropylene, sheepskin or other water-repellent materials.

[0048] The device according to the invention is also suitable for catching leakage liquids from machines.

[0049] The parking plate may be installed at parking places for houses, shops, recreational centres, offices, factory grounds, fuel take-in locations at yacht-basins and petrol stations, bus and tram garages, driveways of houses, etc.

Claims

1. A device (3) for catching leaking liquids, provided with a trough (9) and a grid (4) detachably connected with said trough, by means of which the trough can be closed, **characterized in that** said device (3) is further provided with a water-repellent, non-water leakage liquid absorbing material (13) positioned between said grid (4) and said trough (9).
2. A device (3) according to claim 1, **characterized in that** said absorbent material (13) is present in the trough in the form of a cloth (13).
3. A device (3) according to claim 1 or 2, **characterized in that** said trough (9) is provided with a bottom, which comprises at least one water discharge

channel (11, 12).

4. A device (3) according to claim 3, **characterized in that** said water discharge channel (11, 12) is located in a relatively elevated part of said bottom. 5
5. A device (3) according to claim 3, **characterized in that** said water discharge channel (11, 12) is located in a relatively lower part of said bottom. 10
6. A device (3) according to claim 3, 4 or 5, **characterized in that** said water discharge channel (11, 12) is located in the centre of the trough (9). 15
7. A device (3) according to claim 3, 4 or 5, **characterized in that** water discharge channels (11, 12) are located on either side of the trough (9). 20
8. A device (3) according to any one of the claims 3 - 7, **characterized in that** said water discharge channel (11, 12) is provided with a powdered or granular absorbent material. 25
9. A device (3) according to any one of the preceding claims, **characterized in that** said grid (4) can be locked to said trough (9). 30
10. A parking plate for a vehicle, **characterized in that** said parking plate is provided with at least one device (3) according to any one of the preceding claims. 35
11. A parking plate according to claim 10, **characterized in that** the parking space is provided with at least one plate supporting the vehicle to be parked, which plate comprises said device (3) for catching leakage liquids. 40

Patentansprüche

1. Vorrichtung (3) zum Auffangen von Leckflüssigkeiten, die mit einem Trog (9) und einem Gitter (4) versehen ist, das mit dem Trog lösbar verbunden ist, wodurch der Trog verschlossen werden kann, **dadurch gekennzeichnet, dass** die Vorrichtung (3) außerdem mit einem wasserabstoßenden, Nichtwasserleckageflüssigkeitsabsorptionsmaterial (13) versehen ist, das zwischen dem Gitter (4) und dem Trog (9) angeordnet ist. 45
2. Vorrichtung (3) nach Anspruch 1, **dadurch gekennzeichnet, dass** das Absorptionsmaterial (13) in dem Trog in Form eines Tuchs (13) vorhanden ist. 50
3. Vorrichtung (3) nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** der Trog (9) mit einem Boden versehen ist, der zumindest einen Wasseraus-

tragkanal (11, 12) aufweist.

4. Vorrichtung (3) nach Anspruch 3, **dadurch gekennzeichnet, dass** der Wasseraustragkanal (11, 12) in einem relativ erhöhten Teil des Bodens zu liegen kommt.
5. Vorrichtung (3) nach Anspruch 3, **dadurch gekennzeichnet, dass** der Wasseraustragkanal (11, 12) in einem relativ niedrigen Teil des Bodens zu liegen kommt.
6. Vorrichtung (3) nach Anspruch 4 oder 5, **dadurch gekennzeichnet, dass** der Wasseraustragkanal (11, 12) im Zentrum des Trogs (9) zu liegen kommt.
7. Vorrichtung (3) nach Anspruch 3, 4 oder 5, **dadurch gekennzeichnet, dass** die Wasseraustragkanäle (11, 12) auf jeder Seite des Trogs (9) zu liegen kommen.
8. Vorrichtung (3) nach einem der Ansprüche 3 bis 7, **dadurch gekennzeichnet, dass** der Wasseraustragkanal (11, 12) mit einem pulverisierten oder gekörnten Absorptionsmaterial versehen ist.
9. Vorrichtung (3) nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** das Gitter (4) an dem Trog (9) verriegelt werden kann.
10. Parkplatte für ein Fahrzeug, **dadurch gekennzeichnet, dass** die Parkplatte mit zumindest einer Vorrichtung (3) nach einem der vorangehenden Ansprüche versehen ist.
11. Parkplatte nach Anspruch 10, **dadurch gekennzeichnet, dass** der Parkraum mit zumindest einer Platte versehen ist, die das zu parkende Fahrzeug trägt, wobei die Platte die Vorrichtung (3) zum Auffangen von Leckageflüssigkeiten aufweist.

Revendications

1. Dispositif (3) pour capter des fuites de liquides, comprenant une cuvette (9) et une grille (4) reliée de façon démontable à la dite cuvette et au moyen de laquelle la cuvette peut être fermée, **caractérisé en ce que** le dit dispositif (3) comprend en outre une matière hydrofuge absorbant le liquide de fuite non aqueux (13) placée entre la dite grille (4) et la dite cuvette (9).
2. Dispositif (3) selon la revendication 1, **caractérisé en ce que** la dite matière absorbante (13) est présente dans la cuvette sous la forme d'une toile (13).
3. Dispositif (3) selon la revendication 1 ou 2, **carac-**

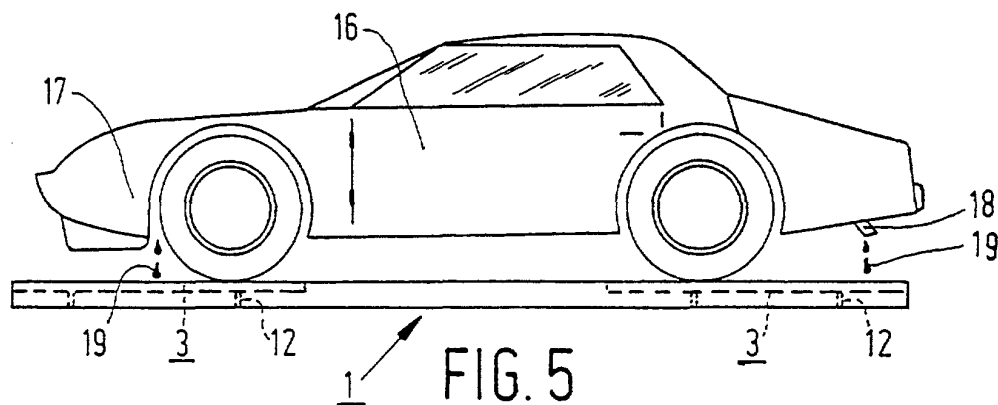
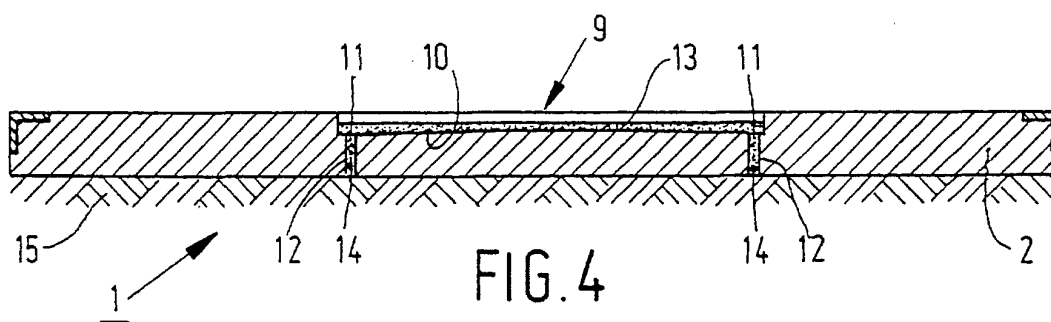
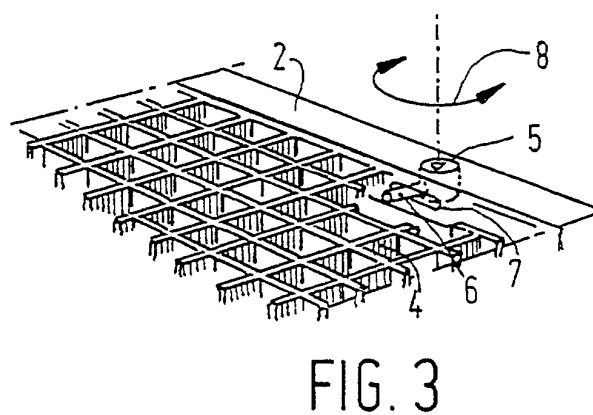
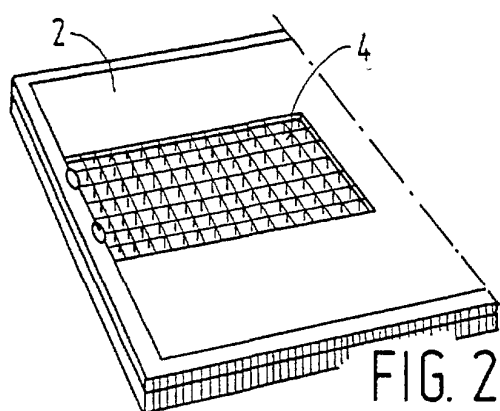
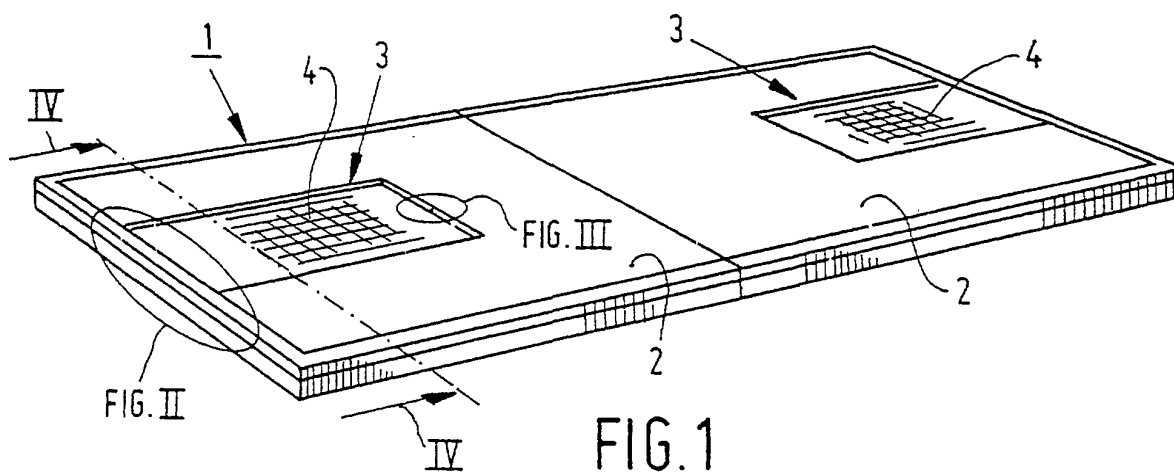
térisé en ce que la dite cuvette (9) possède un fond, qui comporte au moins un canal d'évacuation d'eau (11, 12).

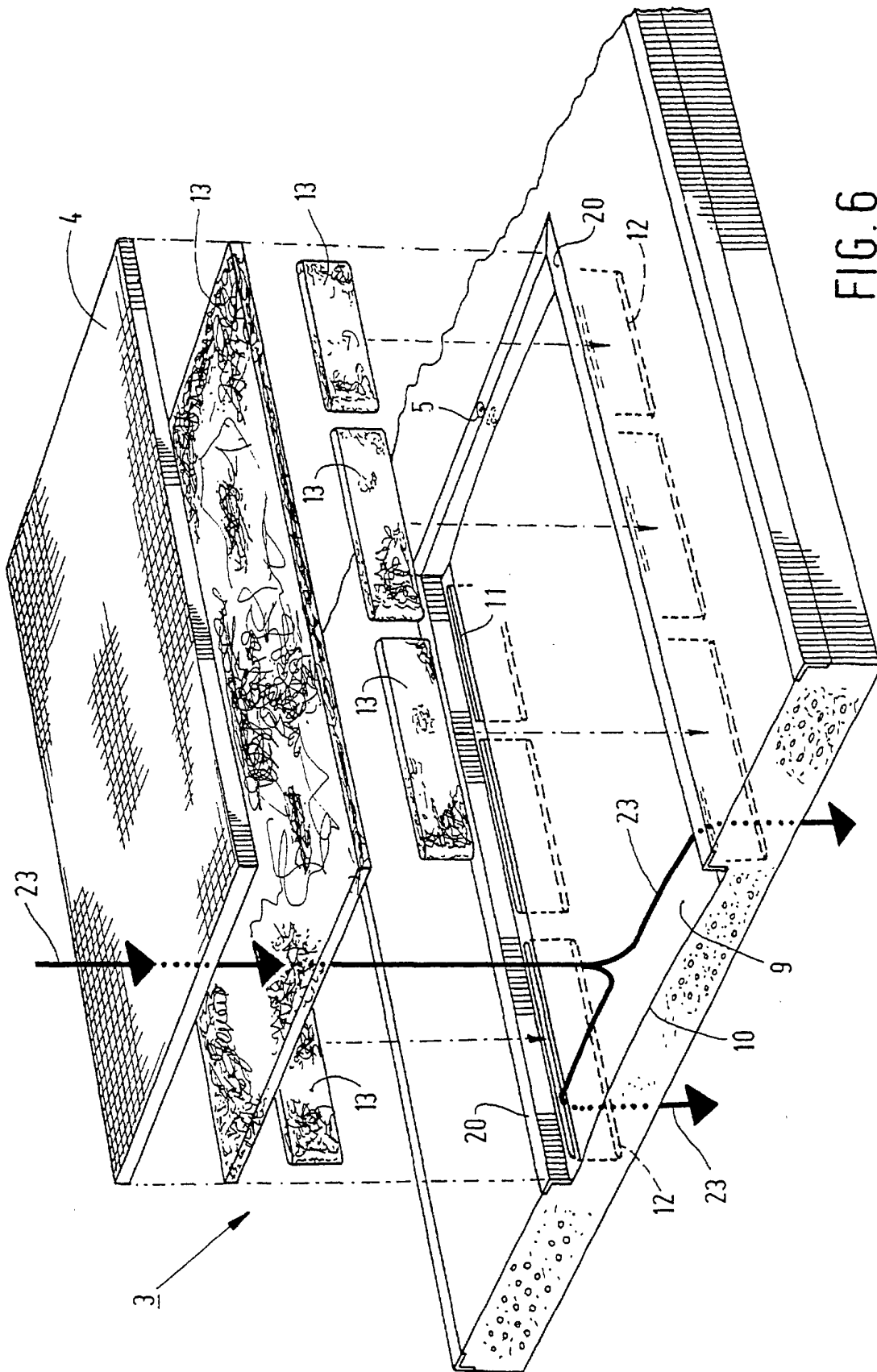
4. Dispositif (3) selon la revendication 3, **caractérisé en ce que** le dit canal d'évacuation d'eau (11, 12) est placé dans une partie relativement élevée du dit fond. 5
5. Dispositif (3) selon la revendication 3, **caractérisé en ce que** le dit canal d'évacuation d'eau (11, 12) est placé dans une partie relativement basse du dit fond. 10
6. Dispositif (3) selon la revendication 3, 4 ou 5, **caractérisé en ce que** le dit canal d'évacuation d'eau (11, 12) est placé au centre de la cuvette (9). 15
7. Dispositif (3) selon la revendication 3, 4 ou 5, **caractérisé en ce que** des canaux d'évacuation d'eau (11, 12) sont placés de part et d'autre de la cuvette (9). 20
8. Dispositif (3) selon une quelconque des revendications 3 à 7, **caractérisé en ce que** le dit canal d'évacuation d'eau (11, 12) est pourvu d'une matière absorbante en poudre ou en grains. 25
9. Dispositif (3) selon une quelconque des revendications précédentes, **caractérisé en ce que** la dite grille (4) peut être verrouillée à la dite cuvette (9). 30
10. Plaque de garage pour un véhicule, **caractérisée en ce que** la dite plaque de garage est pourvue d'au moins un dispositif (3) selon une quelconque des revendications précédentes. 35
11. Plaque de garage selon la revendication 10, **caractérisée en ce que** l'espace de garage comporte au moins une plaque supportant le véhicule à garer, la dite plaque comprenant le dit dispositif (3) de capture des liquides de fuite. 40

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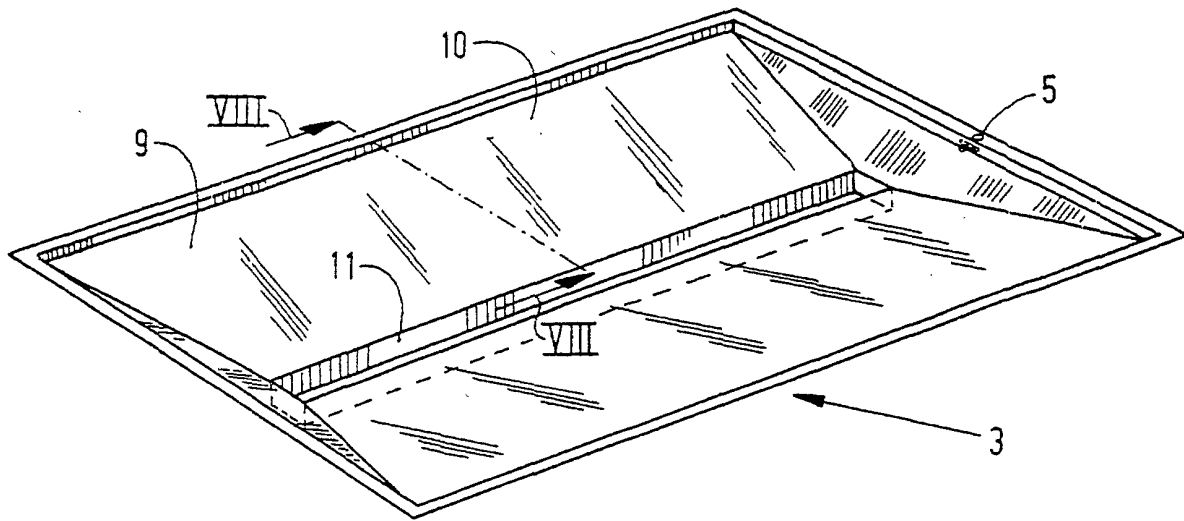


FIG. 7

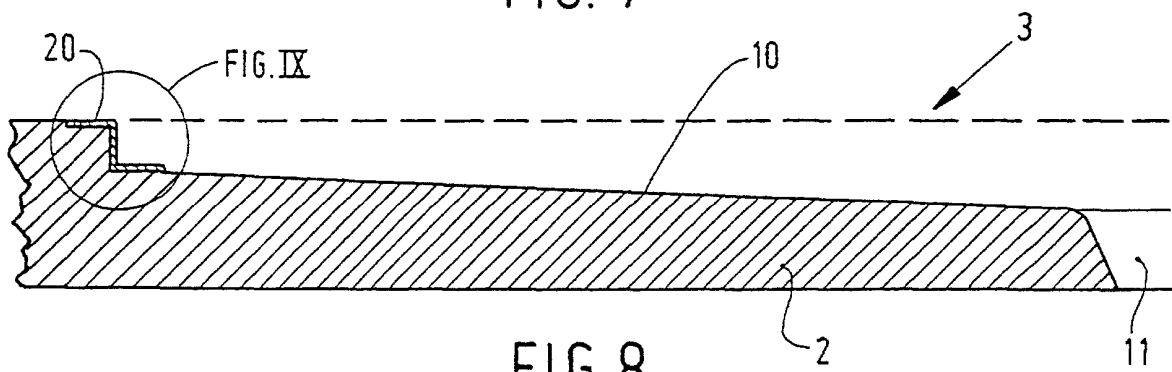


FIG. 8

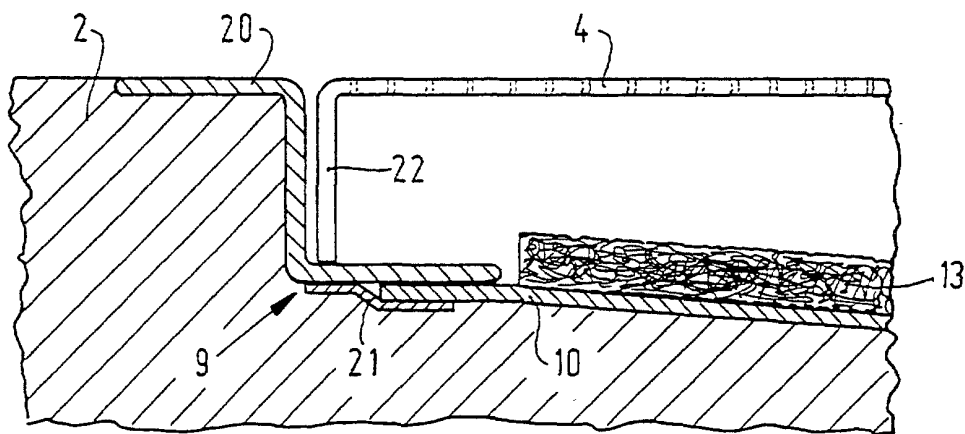


FIG. 9

