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(54) MODULE OF IMPACT ABSORBING BARRIER OF A MOTORCYCLE RACE TRACK

MODUL EINER STOSSDÄMPFUNGSBARRIERE EINER MOTORRADRENNSTRECKE

MODULE DE BARRIÈRE D'ABSORPTION D'IMPACT D'UNE PISTE DE COURSE DE MOTOCYCLE

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Description

[0001] The invention is a module of impact absorbing barrier of a motorcycle race track, especially a slag raceway.

[0002] For the safety of competitors and the audience gathered around the motorcycle race track, it is fenced with a barrier, whereas on the straight sections it is a permanent barrier, especially absorbing, while on turns there are in the form of barriers inflated with air.

[0003] A solid slag raceway barrier is known from practice, which consists of a series of modules, whereas each module has a rectangular shape and is made of wooden boards arranged vertically to which a horizontal rubber strip, called a board or a protective strip, adheres from below. These modules are fastened to columns recessed into the ground. The task of a permanent barrier is to ensure the safety of the audience and motorcyclists in the event of the driver losing control of the motorcycle when leaving the turn. In this case, the centrifugal force pushes the motorcyclist to the outside and he hits the barrier with high speed. On one hand, the barrier should ensure that the motorcyclist does not fall out of the track, on the other hand, that he does not fall. In practice, a motorcyclist often falls and suffers from various injuries, especially if he falls under the wheel of another motorcyclist following him. There have also been two accidents when the barrier was damaged as a result of the impact and a piece of the board killed the motorcyclist. The problem of protecting the motorcyclist is still open.

[0004] A module of an ice rink board is known from the patent application no. PL 12417 U1. The module consists of a panel fixed to a vertical truss, which on the back features supports with feet. An eaves board is attached along the lower, longer edge of the panel. The ice rink board is exposed to significantly lower loads than the barrier used on motorcycle race tracks.

[0005] Another race track barrier is known from US 2005/058504 A1.

[0006] The essence of a module of an absorbing barrier for motorcycle racing, in the shape of a rectangular panel vertically positioned along which a strip is fixed, one end of which extends beyond the panel, consists in the fact that the panel consist of a support layer to which the absorbing layer, covered with a sliding layer, adheres. The strip is preferably attached to the sliding layer or directly to the absorbing layer.

[0007] The support layer and the absorbing layer adhering thereto are preferably surrounded by a coating, especially when made of water-absorbent materials. The panel preferably has sides cut at an angle α relative to its rear surface. In another version, the sides of the panel are cut at right angles to the back surface of the panel to which the tab is fastened. In a further preferred variant, the sides of the absorbing layer are cut in steps relative to the back surface of the panel.

[0008] The barrier module according to the invention as defined in claim 1 provides, on the one hand, absorption of the impact energy through the absorbing layer, and on the other hand, thanks to the sliding layer, it moves the motorcycle along the barrier without significant braking, which translates into fewer accidents related to the fall of the motorcyclist after hitting a known barrier.

[0009] The object of the invention is illustrated in the examples of design versions in schematic drawings, in which:

- Fig. 1 is a view of a module according to the first variant, from the side of the track;
- Fig. 2 shows the module according to the first variant, in view from above;
- Fig. 3 is a view of a module according to the first variant, from the side of the track;
- Fig. 4 shows the module according to the first variant, in view from above;
- Fig. 5 is an enlarged Element A highlighted in Figure 4;
- Fig. 6 shows a fragment of a cross-section with the plane B-B indicated in Figure 1;
- Fig. 7 shows an alternative solution to the cross-section with the plane B-B indicated in Figure 1;
- Fig. 8 is a view of a module according to the third variant, from the side of the track;
- Fig. 9 shows the module according to the third variant, in view from above.

[0010] **Figure 1** shows a module of the barrier in a track-side view. The barrier module consists of a panel (1) whose lower part is adjoined by the protective strip (2). The panel (1) has a rectangular shape with a base (3) and a parallel ridge (4), which are horizontal, as well as the first side (5) and the second side (6). A strip (2) is fastened to the panel (1) along the base (3), and its first end (2a) protrudes beyond the outline of the panel (1), i. e. beyond the first side (5), while the other end (2b) does not reach the second side (6) of the outline of the panel (1).

[0011] **Figure 2** shows the barrier module in a top view. A strip (2) is fastened to the panel (1), and its first end (2a) protrudes beyond the outline of the panel (1), while the other end (2b) does not reach the outline of the panel (1). The panel (1) has a layer structure and consists of a sliding layer (7), an absorbing layer (8) and a support layer (9), as seen from the track. The sides (5, 6) of the panel (1) are cut at an angle α relative to the back surface (10) of the panel (1), which at the same time constitutes the outer surface of the support layer (9). The angle α is sharp and is in the range of 30-60°, and in this case amount to 45°.

[0012] In the first variant, an OSB3 board was used as the support layer (9), rebonded polyurethane foam as the absorbing layer (8), PVC transport belt normally used in belt conveyors carrying previously packaged products as the sliding layer (7), and general-purpose fabric/rubber band, also used in belt conveyors transporting grainy materials, as the strip (2).

[0013] **Figures 3 and 4** present the second version of the barrier module. A strip (14) is attached to the panel (12) along the base (13), while the tab (17) is attached to the back surface (15) along the first side (16). The first end (14a) of the strip (14) extends beyond the first side (16) while the second end (14bb) does not reach the second side (18). The panel (12) has a layer structure and consists of a sliding layer (19), an absorbing layer (20) and a support layer (21), as seen from the track. The sides (16, 18) of the panel (12) are cut at a straight angle relative to the back surface (15) of the panel (12). The sliding layer (19) extends beyond the first side (16) to a lesser extent than the strip (14) and does not reach the second side (18).

[0014] In the second version, plywood is used as the support layer (21), polyester foam as the absorbing layer (20), a PVC transporting belt reinforced with rigid fibre, normally used in belt conveyors, as a sliding layer, and PVC transporting belt also as the strip (14). Tarpaulin material coated on both sides with PVC was used as the coating (22). Films or curable coatings applied in a known manner such as paints or varnishes can also be used. As the absorbing layer, it is also possible to use elastic SBR and EPDM granulate panels, normally used for the ground in children's playgrounds.

[0015] **Figure 5** shows the enlarged Element A from Figure 4. The support layer (21) together with the absorbing layer (20) are tightly surrounded by a coating (22) protecting them against atmospheric influences, especially rain. The tab (17) is attached to the support layer (21) by means of screws (23). The sliding layer (19) is glued to the coating (22).

[0016] **Figure 6** shows a B-B^1 cross-section through the first version of the barrier with the B-B plane indicated in Figure 1. The absorbing layer (8) adheres with its whole surface to the support layer (9). The sliding layer (7) adheres with its whole surface to the absorbing layer (8), and the strip (2) adheres to the sliding layer (7).

[0017] **Figure 7** shows a B-B^2 cross-section of an alternative solution to that shown in Figure 6. The strip (23) adheres directly to the support layer (8), and the sliding layer (24) adheres to the remaining surface of the absorbing layer (8). The support layer (9) adheres with its entire surface to the second surface of the absorbing layer.

[0018] **Figures 8 and 9** show the third version of the barrier module. A strip (28) is attached to the panel (26) along the base (27). The first end (28a) of the strip (14) extends beyond the first side (29) while the second end (28b) does not reach the second side (30). The panel (26) has a layer structure and consists of a sliding layer (31), an absorbing layer (32) and a support layer (33), as seen from the track. The sides (29, 30) of the absorbing layer are cut in steps relative to the back surface (34) of the panel (26) so that, when the barrier is put together, successive modules overlap each other. The sliding layer (31) extends beyond the first side (29), beyond which the strip (28) extends, and does not reach the second side (18). The support layer (33) extends beyond the first side (29), and does not reach the end of the second side (30).

[0019] In the third version, MHD chipboard was used as a support layer (21), Styroduf as the absorbing layer (20), PCV liner normally used for finishing industrial floors as the sliding layer (31), and a conveyor belt reinforced with fabric, normally used in belt conveyors transporting grainy materials, as the strip (28).

[0020] In all versions, the connections between the individual layers are made using known adhesives suitable for the materials joined. The materials used to make the individual versions of the invention may be used interchangeably to make the appropriate layers.

Claims

1. Module of impact absorbing barrier for a motorcycle race track, in the shape of a rectangular panel vertically positioned in a mounted state, the panel comprising a horizontally arranged base, a parallel, horizontal ridge, two sides (5, 6) and two parallel surfaces, and a strip fixed along to the base, one end of the strip extending beyond the outline of the panel, wherein the panel (1, 12, 26) consists of a three layers, parallel to each other and parallel to said two parallel panel surfaces, the first layer (10) being a sliding layer (7, 19, 31) made from polyvinyl chloride, adjoined to a first side of an absorbing layer (8, 20, 32), made from elastic material, and on the other side of the absorbing layer (8, 20, 32) adjoined by a support layer (9, 21, 33) made from wood-based material, wherein the sliding layer (7, 9, 31) and the absorbing layer (8, 20, 32) are continuous.

2. The barrier module according to claim 1, wherein the strip (23) is attached to the absorbing layer (8).

3. The barrier module according to claim 1, wherein the strip (2) is attached to the sliding layer (7).

4. The barrier module according to claim 1, wherein the support layer (21) and the absorbing layer (20) adjacent to it are surrounded by a coating (22).

5. The barrier module according to claim 1, wherein the sides (5,6) of the panel (1) are cut at an acute angle a relative to the back surface (10) of the panel (1).

6. The barrier module according to claim 1, wherein the sides (16, 18) of the panel (12) are cut at a straight angle relative to the second surface (15) of the panel (12).

7. The barrier module according to claim 1, wherein the sides (29,30) of the absorbing layer (32) are cut in steps in relation to the second surface (33) of the panel (26).

8. The barrier module according to claim 1, wherein a tab (17) is attached to the second surface (15) of the support layer (21).

9. The barrier module according to claim 1, wherein the absorbing layer (8, 20, 32) is made from rebonded polyurethane foam, polyester foam, SBR or EPDM granulate.

10. The barrier module according to claim 1, wherein the support layer (9,21,33) is made from plywood, OSB or MHD.

Patentansprüche

1. Absorbierendes Barrieremodul für eine Motorradrennstrecke in Form einer rechteckigen Platte, die dazu bestimmt ist, vertikal befestigt zu werden, und die sich durch eine Basis, eine Oberseite, zwei Seiten (5, 6) und zwei parallele Ebenen auszeichnet, und die eine Leiste enthält, die horizontal entlang der Basis an der ersten Ebene befestigt ist und deren eines Ende über die erste Seite der Platte hinausragt, **gekennzeichnet dadurch, dass** die Platte (1, 12, 26) aus drei zueinander und zu ihrer Oberfläche parallelen Schichten besteht, von der ersten Ebene (10) ausgehend, aus einer Gleitschicht (7, 19, 31) aus Polyvinylchlorid, die an die erste Seite einer absorbierenden Schicht (8, 20, 32) aus einem elastischen Material haftet, und an die zweite Seite der absorbierenden Schicht (8, 20, 32) eine Tragschicht (9, 21, 33) aus einem holzähnlichen Material haftet, wobei die Gleitschicht (7, 19, 31) und die absorbierende Schicht (8, 20, 32) durchgehend sind.

2. Barrieremodul nach Anspruch 1, **gekennzeichnet dadurch, dass** eine Leiste (23) an der absorbierenden Schicht (8) befestigt ist.

3. Barrieremodul nach Anspruch. 1, **gekennzeichnet dadurch, dass** eine Leiste (2) an der Gleitschicht (7) befestigt ist.

4. Barrieremodul nach Anspruch. 1, **gekennzeichnet dadurch, dass** die Tragschicht (21) und die angrenzende absorbierende Schicht (20) von einer Beschichtung (22) bedeckt sind.

5. Barrieremodul nach Anspruch 1, **gekennzeichnet dadurch, dass** die Seiten (5, 6) der Platte (1) in einem spitzen Winkel α gegenüber der hinteren Ebene (10) der Platte (1) abgeschrägt sind.

6. Barrieremodul nach Anspruch 1, **gekennzeichnet dadurch, dass** die Seiten (16, 18) der Platte (12) in einem spitzen Winkel α gegenüber der hinteren Ebene (15) der Platte (12) abgeschrägt sind.

7. Barrieremodul nach Anspruch 1, **gekennzeichnet dadurch, dass** die Seiten (29, 30) der absorbierenden Schicht (32) gegenüber der zweiten Ebene (34) der Platte (26) treppenförmig abgeschnitten sind.

8. Barrieremodul nach Anspruch 1, **gekennzeichnet dadurch, dass** eine Überlappung (17) an der zweiten Ebene (15) der Platte (12) befestigt ist.

9. Barrieremodul nach Anspruch 1, **gekennzeichnet dadurch, dass** die absorbierende Schicht (8, 20, 32) aus Polyurethanschaum, Polyesterschaum, Styrodur, SBR oder EPDM hergestellt ist.

10. Barrieremodul nach Anspruch 1, **gekennzeichnet dadurch, dass** die Tragschicht (9, 21, 33) aus Sperrholz, OSB- oder MDF-Platte hergestellt ist.

Revendications

1. Module de barrière absorbante pour piste de course de motos, en forme de plaque rectangulaire destinée à être fixée verticalement, constituée d'une base, une arête, deux côtés (5, 6) et deux plans parallèles, contenant une bande fixée horizontalement le long de la base au premier plan, dont une extrémité est en saillie par rapport au premier côté de la plaque, **caractérisé en ce que** la plaque (1, 12, 26) est constituée de trois couches parallèles entre elles et à sa surface, en comptant à partir du premier plan (10), une couche de glissement (7, 19, 31) en polychlorure de vinyle qui adhère au premier côté de la couche absorbante (8, 20, 32) en matière plastique souple et une couche de support (9, 21, 33) en matériau semblable au bois, qui adhère au second côté de la couche absorbante (8, 20, 32) ; la couche de glissement (7, 19, 31) et la couche absorbante (8, 20, 32) étant continues.

2. Module de barrière selon la revendication 1, **caractérisé en ce que** la bande (23) est fixée à la couche absorbante (8).

3. Module de barrière selon la revendication 1, **caractérisé en ce que** la bande (2) est fixée à la couche de glissement (7).

4. Module de barrière selon la revendication 1, **caractérisé en ce que** la couche de support (21) et la couche absorbante (20) qui γ adhère sont enveloppées d'un revêtement (22).

5. Module de barrière selon la revendication 1, **caractérisé en ce que** les côtés (5, 6) de la plaque (1) sont chanfreinés à un angle aigu α par rapport au plan arrière (10) de la plaque (1).

6. Module de barrière selon la revendication 1, **caractérisé en ce que** les côtés (16, 18) de la plaque (12) sont chanfreinés à un angle droit par rapport au second plan (15) de la plaque (12).

7. Module de barrière selon la revendication 1, **caractérisé en ce que** les côtés (29, 30) de la couche absorbante (32) sont chanfreinés en gradin par rapport au second plan (34) de la plaque (12).

8. Module de barrière selon la revendication 1, **caractérisé en ce qu'**une patte (17) est fixée au second plan (15) de la plaque (12).

9. Module de barrière selon la revendication 1, **caractérisé en ce que** la couche absorbante (8, 20, 32) est faite de mousse de polyuréthane, de mousse de polyester, de polystyrène extrudé, de SBR ou d'EPDM.

10. Module de barrière selon la revendication 1, **caractérisé en ce que** la couche de support (9, 21, 33) est faite de contreplaqué, de panneaux OSB ou de panneaux à base de bois.

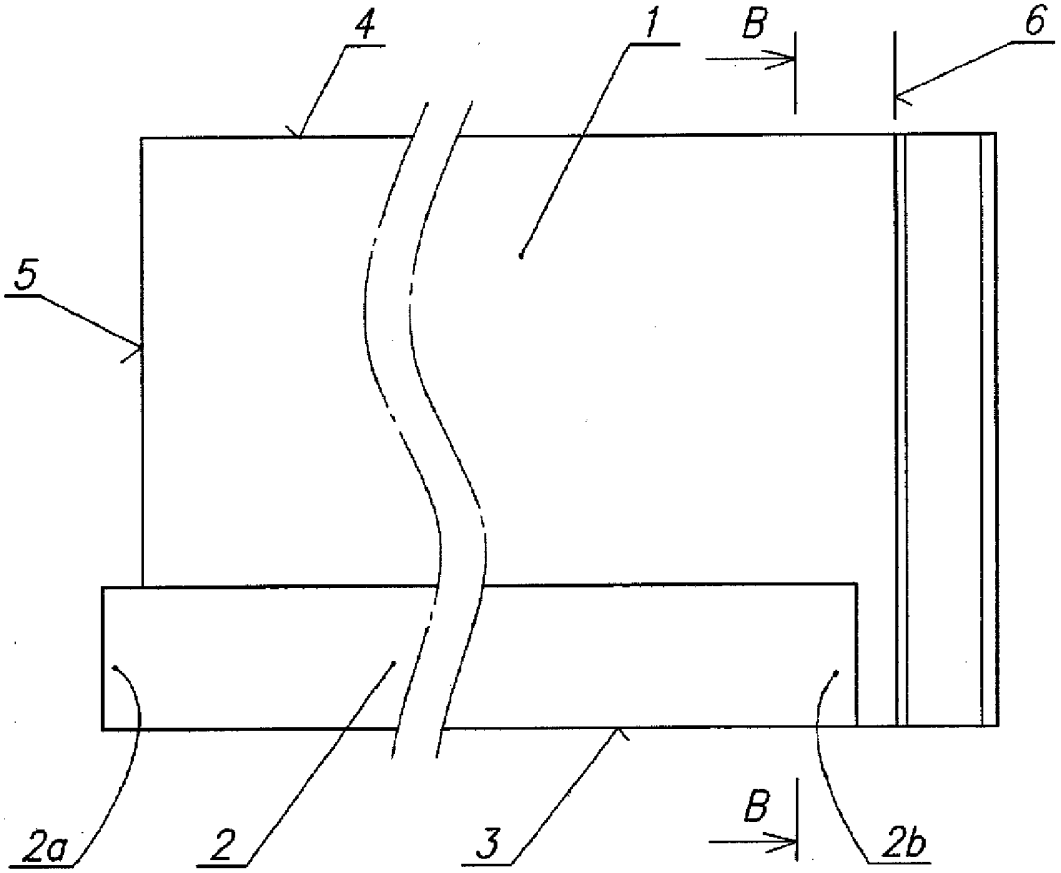

Fig. 1

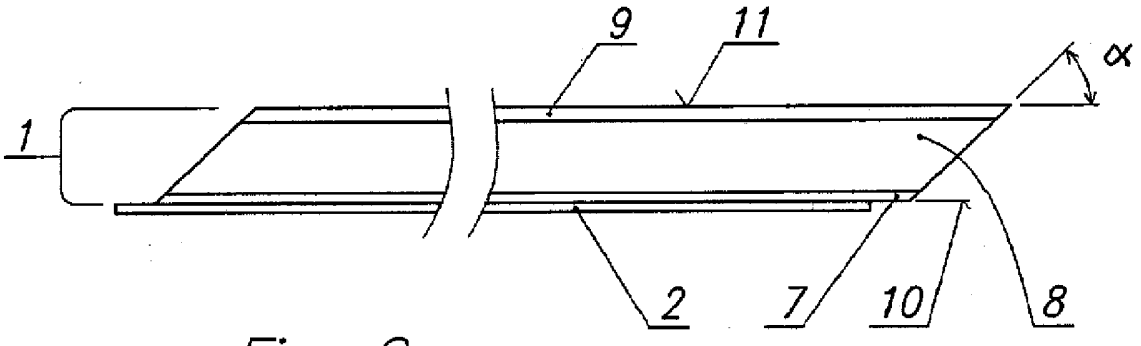

Fig. 2

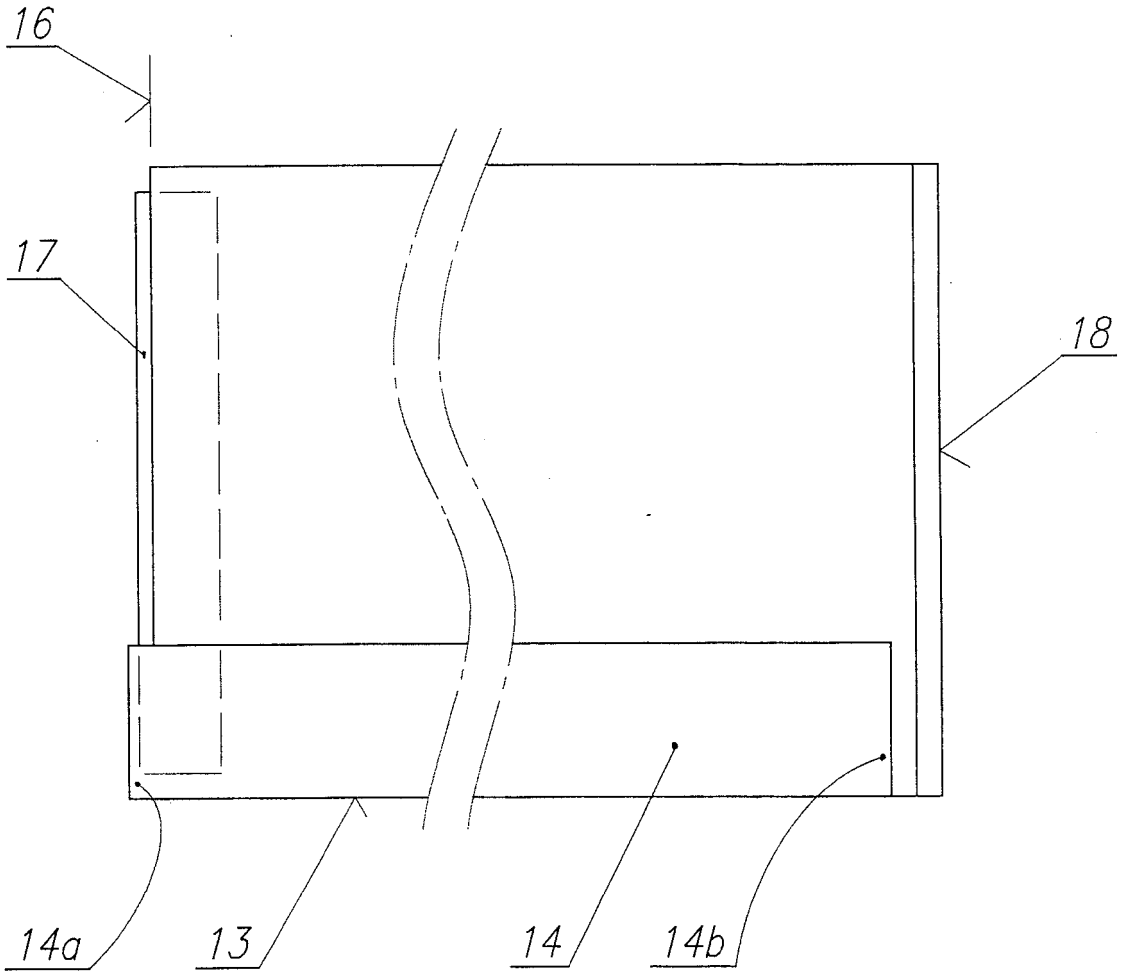

Fig. 3

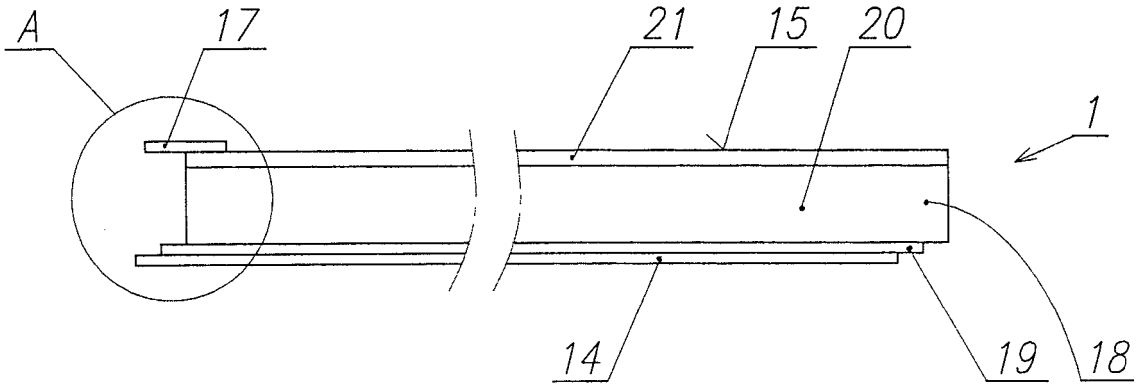

Fig. 4

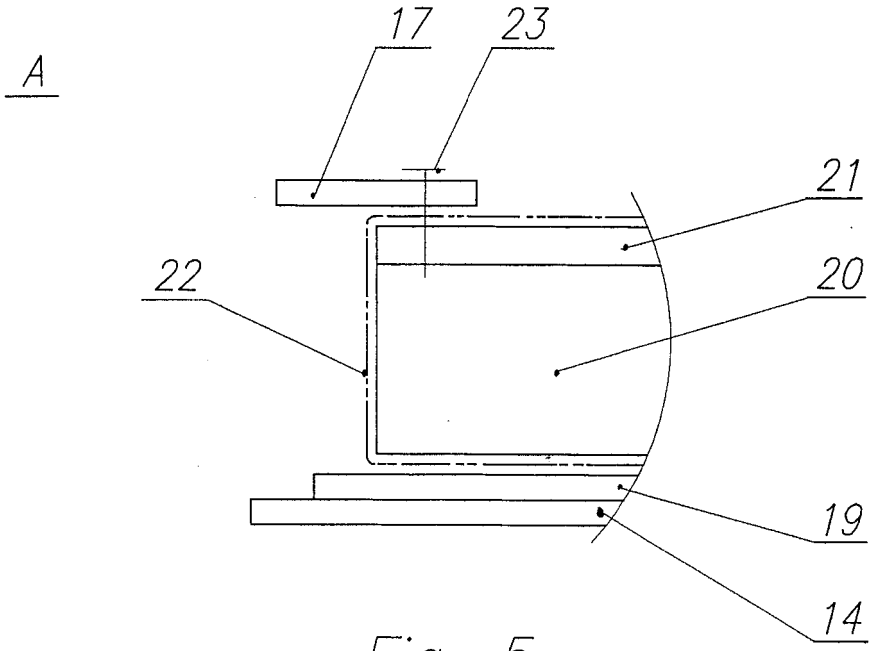

Fig. 5

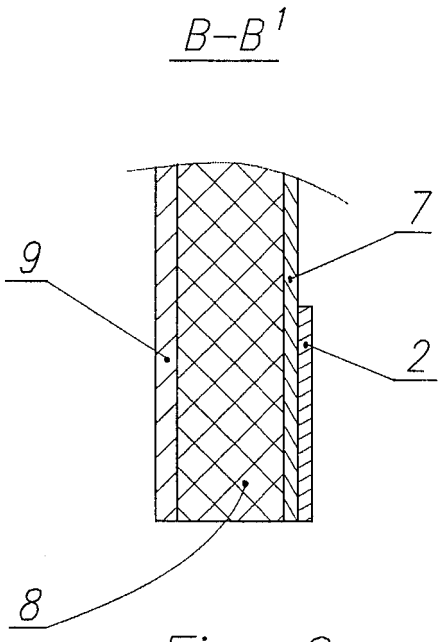

Fig. 6

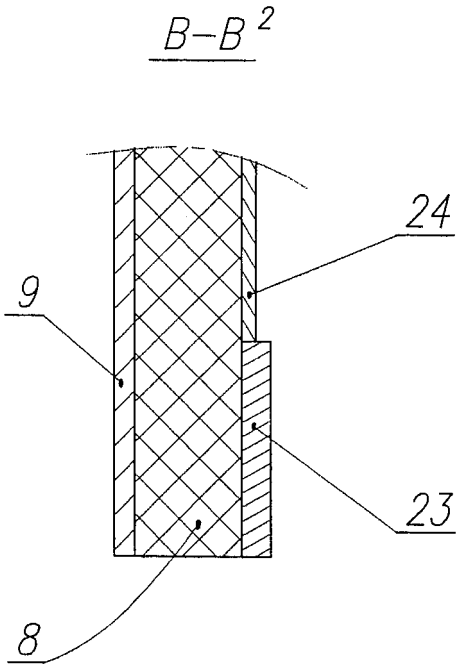

Fig. 7

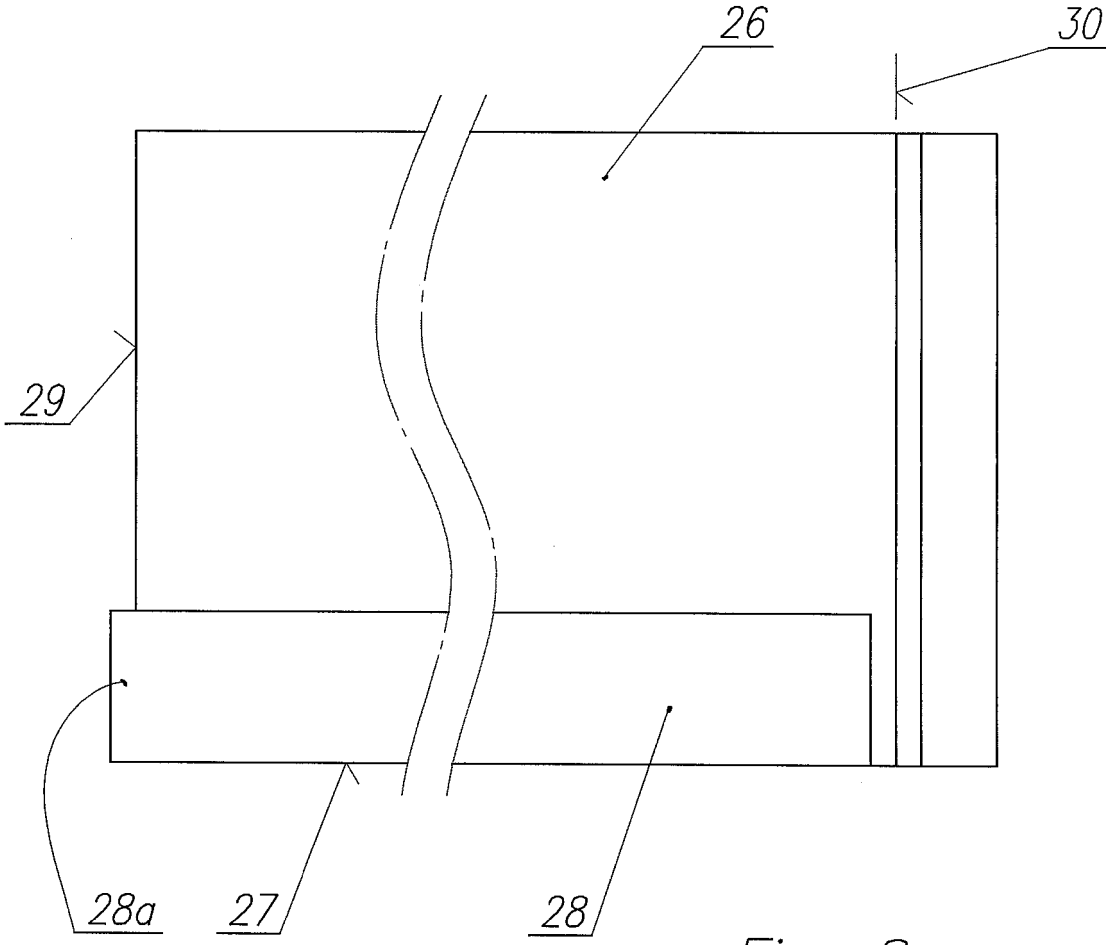

Fig. 8

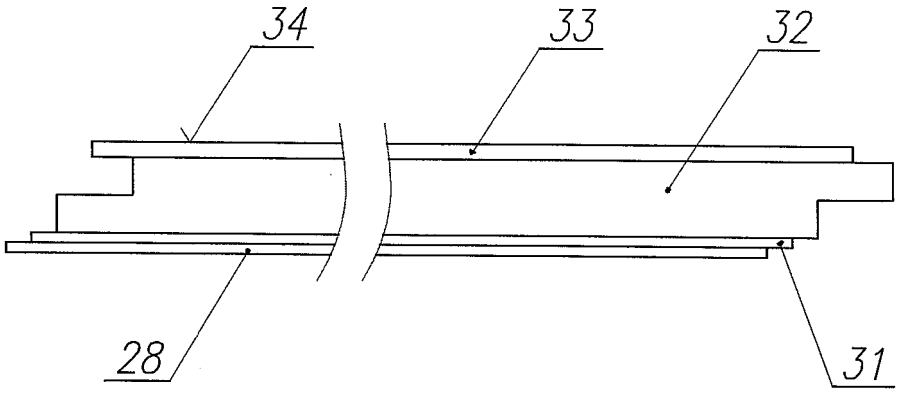

Fig. 9

REFERENCES CITED IN THE DESCRIPTION

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- US 2005058504 A1 **[0005]**