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(72) Inventor; and

(71) Applicant: **LEFLER, László** [HU/HU]; H-1133 Budapest, Bessenyei u.24. (HU).

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(54) Title: BALL PLAYFIELD FOR PRACTISING BALL GAMES

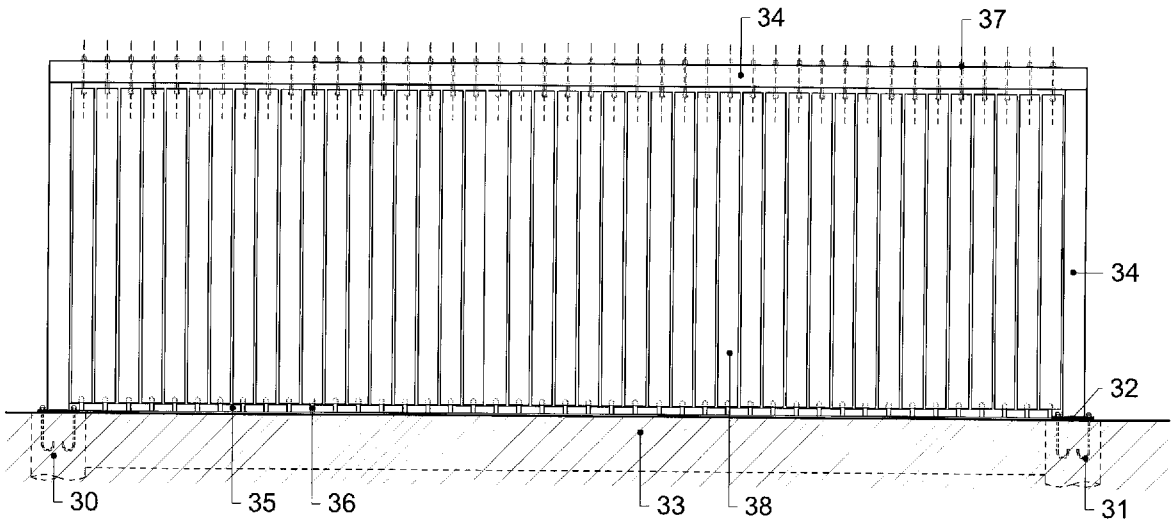

Fig. 3a

(57) Abstract: The invention is a ball play-field (J) for practising ball games which consists of at least one game space (1) and at least one practising space element, the practising space element being directly or indirectly anchored to the ground in a detachable way. The practising space element comprises two vertical supports that are anchored to the foundation formed in the ground by detachable fasteners, an upper horizontal support connecting the two vertical supports together at the top and the two vertical supports and the upper horizontal support make up a single rigid support frame (24, 34, 44, 54), and a lower horizontal support at ground level along the connecting line between the two vertical supports and fastened to the ground. There is a practising wall between the upper horizontal support of the support frame (24, 34, 44, 54) and the lower horizontal support fastened at least to the upper horizontal support with detachable fastening elements. The practising space element is a reflex space element (3), and the practising wall of the reflex space element (3) is constructed from column elements (38) that can be turned around a vertical axis and fixed in different positions, and lifted out if necessary. Preferably, the practising space element is located at the edge of at least one game space (1), the ball playfield (J)

[Continued on next page]

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comprises at least one additional game space and one additional practising space element, and the additional practising space element is a tyre space element (2), a targeting space element (4) or a velocity measuring space element (5), and the ball playfield (J) comprises at least one coordinating space element (6). The practicing wall of the reflex space element (3) is constructed in such a way that the long prismatic column elements (38) are connected to pins (36) formed on the lower horizontal support and to joint- pins (37, 39) led through holes of the upper horizontal support.

Ball playfield for practising ball games

Subject of this invention is a ball playfield for practising ball games which consists of at least one game space and at least one practising space element, the practising space element being directly or indirectly anchored to the ground in a detachable way. The practising space element comprises two vertical supports that are anchored to the foundation formed in the ground by detachable fasteners, an upper horizontal support connecting the two vertical supports together at the top and the two vertical supports and the upper horizontal support make up a single rigid support frame, and a lower horizontal support at ground level along the connecting line between the two vertical supports and fastened to the ground. There is a practising wall between the upper horizontal support of the support frame and the lower horizontal support fastened at least to the upper horizontal support with detachable fastening elements.

The currently existing playfields are mostly closed, have a relatively small ground space, but most of all are not adequately proportioned, consequently the playing spaces for different ages hit into each other disturbing self-forgetting play. Other issues may emerge due to the fact that children show different dynamic behaviour while playing.

In addition, we are well aware of the adverse effects of, and addiction to computer games which highlights even more emphasised way the need for counteractions against withdrawal symptoms caused by depriving of these games by providing real-world customized activities for the different needs as a source of joy.

Numerous solutions are known to satisfy physical activity needs. For example, school gymnastics, playgrounds, sport clubs, exercises done at home and other activities, that are supposed to protect our health. Most of the time, however, these occasions are sporadically available and provide limited options due to time constrains, costs, lack of play mates or the monotony.

There are other solutions used for developing and mastering physical movement technics such as kicking wall for football players of which description can be found in published Hungarian patent application No. 5903/90, "Complex football exercise field" featuring multiple parallel kicking walls installed in a closed exercise field. Disadvantage of this solution is the rigid arrangement on a closed area.

Patent document with registration number HU 193929 A titled as "Device for training ball players first footballers and tennis-players for practising the ball technique" also consists of similar solutions. The structure described in the invention is a wall from which the kicked or stroked ball bounces back unpredictably. This feature of the wall is ensured by overlapped curved surfaces mounted on the forefront face of the wall from which the ball bounces back and their geometric centrelines are

perpendicular to the wall surface. Mentioned curved surfaces are formed preferably as spherical segments. Disadvantage of the solution is the relatively high implementation cost.

Next known solution is described in the patent document HU 222643 B1 with title "Equipment for helping training of a ball game" which includes a target board aimed at by players with balls used for the training and exercise and this board features a rigid frame with elastic, light-transmitting ball-catching surface stretched over it, and behind this surface a segmented light source is installed to lit distinct areas of the surface in a controllable way. The training and exercising board uses an impact sensor which is capable of detecting the impact time and impact place of the ball when it hits the ball-catching surface. The equipment also comprises a central unit which receives the place and time information from the sensor and is linked to the actuating lines of the light source. Disadvantage of the solution is the fact that a trainer is required to cooperate.

Also known a published patent document with publication number WO 2004/002585 A1 and titled as „Dismountable practice wall". The subject of the invention is a dismountable practice wall consisting of a vertical panel comprising boards, a frame comprising two vertical tubular legs and two horizontal U-shaped sections which are disposed opposite one another, and a support base comprising two support elements which are disposed perpendicular to the panel and which are anchored to each side of the frame. The described practice wall is not anchored to the ground, it needs to get assembled for the use and disassembled after use.

Also known a published patent document with publication number DE 32 39 249 A1 which is titled as „Training wall, at which individual target practice can be carried out for different ball games". The subject of the invention is a mobile training wall, at which individual target practice can be carried out for different ball games, such as football, handball, hockey or the like. The training wall consists essentially of a stable bearing construction, preferably in a framework construction, which is covered by wall-forming elements, such as boards, panels or the like. The described training wall is not anchored to the ground, and it is moved away on rolls.

None of the known solutions can cover all possible forms of ball games and does not allow each age range to play equally and get to know their capability boundaries in a pace that suits their needs and enjoyable also for adults on one single ball game playfield customized for practising.

We have not found written determination in professional literature and patent documents that would aim saving and maintaining the instinctive and natural need for physical activities developed in the childhood period for the whole life.

None of the known solutions include complex playground that can be used by different ages and can be implemented quickly at low cost and can be dismounted easily then re-installed on another place if required.

The aim of the invention is to create ball playfield suitable to satisfy these needs and allows practising ball games in a complex way.

The invention includes also creating various space elements for ball players that return the ball in straight plane, angular direction, at a given pace, rhythm that has been bowled, hit, kicked, headed against it and which set tasks of varying intensity, unexpected and various difficulty for ball players endeavouring to reach continuous development and, where appropriate, positions of the space element can also be adjusted.

It was a significant recognition that an alternative, separable ball playfield can be a solution since these can be adapted to the needs of different ages, equipped with relevant space elements, provided that they are motivating, flexible and multifunctional, these can be used without time restrictions by both individuals and groups or by families regardless of their skilfulness.

For the purpose of solving the appointed aim, the invention is therefore a ball playfield for practising ball games which consists of at least one game space and at least one practising space element, the practising space element being directly or indirectly anchored to the ground in a detachable way, the practising space element comprises two vertical supports that are anchored to the foundation formed in the ground by detachable fasteners, an upper horizontal support connecting the two vertical supports together at the top and the two vertical supports and the upper horizontal support make up a single rigid support frame, and a lower horizontal support at ground level along the connecting line between the two vertical supports and fastened to the ground, a practising wall between the upper horizontal support of the support frame and the lower horizontal support fastened at least to the upper horizontal support with detachable fastening elements, where the practising space element is a reflex space element, and the practising wall of the reflex space element is constructed from column elements that can be turned around a vertical axis and fixed in different positions, and lifted out if necessary.

Therefore, the invention is a ball playfield that creates fun regardless of age, gender, time constraints, financial status, duress, and abilities, can be used equally by anyone, implemented cost-effectively and by utilizing different arrangements of practising space elements, it motivates to keep up physical activity and at least one space element of the ball playfield comprises a practising wall made up of adjustable elements.

When the invention is arranged in the preferred way the practising space element is located at the edge of at least one game space, the ball playfield comprises at least one additional game space and one additional practising space element, and the additional practising space element is a tyre space element, a targeting space element or a velocity measuring space element, and the ball playfield comprises at least one coordinating space element.

When the invention is arranged in the preferred way the practising wall of the reflex space element is constructed in such a way that the long prismatic column elements are connected to pins formed on the lower horizontal support and to joint-pins led through holes of the upper horizontal support.

In this arrangement, it is also an advantage that the pins are terminated in hemispherical convex surfaces, which surfaces make up swivel beddings with the hemispherical concave surfaces of the bushings on lower part of the column elements.

In this arrangement, it is also an advantage that the joint-pins when elevated allow the column elements being lifted out or turned and then the column elements getting fixed by replacing the joint-pins.

In this arrangement, it is also an advantage that the material of the column elements is dense reinforced concrete or fibre reinforced concrete though the material of column elements can be, for example, glass fibre reinforced plastic recycled from waste plastic material, constructed as hollow grid structure corresponding to the strength requirements.

In this arrangement, it is also an advantage that the column elements are of four-sided prism shape, the column elements have flat surfaces on three sides and curved surface on the fourth side or could be an alternative version is that the column elements have flat surface on the first side, curved surface on the second side, conical surface on the third side, and flat elastic surface on the fourth side.

Another preferred arrangement of the invention is that the practising wall of the tyre space element is made of recycled tyres, where displacement of superimposed tyres forming a bonded wall is prevented by detachable vertical supports that connect the upper horizontal support and the lower horizontal support.

In this arrangement, it is also an advantage that the detachable vertical supports are combinations of pipes and pull-out joint-pins where the pipes are connected to the lower horizontal support and to the pull-out joint-pins led through holes of the upper horizontal support.

In this arrangement, it is also an advantage that the distance between the upper end of the pipes and the bottom plane of the upper horizontal support is greater than the height of the tyres.

Another preferred arrangement of the invention is that the practising wall of the targeting space element is divided horizontally and vertically into target sectors superimposed in multiple lines, any of the target sectors at the side of the game space are separated from each other by means of vertical tensioning straps fixed in a detachable way between the upper horizontal support and the lower horizontal support, and horizontal tensioning straps fixed in a detachable way between the two vertical supports, and any of the target sectors are separated from each other at the far side of the game space by vertical and horizontal protective nets fixed to a rigid grid structure.

Another preferred arrangement of the invention is that the practising wall of the velocity measuring space element is constructed from stretched elastic fabric which is connected to connection points formed on the two vertical supports and the upper horizontal support by means of springs and it is also connected to connection points formed in the middle section of the two vertical supports by springs with scaled indicator, and a target area is marked in the middle of the elastic fabric.

Another preferred arrangement of the invention is that the coordinating space element comprises a vertical support realized as an embedded pipe or rod inside the vertical support of a practising space element or a separate vertical support anchored to a foundation in ground in a detachable way, that allows movement vertically and turning around a vertical axis and comprises a cogged section around the circumference at the bottom end that is connected to a geared lifter movable by a crank handle.

In this arrangement, it is also an advantage that a horizontal cantilever that can be turned around a vertical axis is mounted to the vertical support of the coordinating space element to which a hanging ball with adjustable height is attached.

Details of the invention will now be described through examples and drawings.

Drawings show the followings:

Figure 1 is an example for a ball playfield for practising ball games, plan view,

Figure 2a is a front view of the tyre space element,

Figure 2b is a horizontal cross section of the tyre space element,

Figure 2c is a vertical cross section of the tyre space element,

Figure 3a is a front view of the reflex space element,

Figure 3b is a horizontal cross section of the reflex space element,

Figure 3c is a horizontal cross section of the reflex space element, the elements turned away,

Figure 3d is a vertical cross section of the reflex space element,

Figure 3e is a detail of the vertical cross section of the reflex space element,

Figure 3f is a vertical cross section of an element of the reflex space element,

Figure 4a is a front view of the targeting space element,

Figure 4b is a horizontal cross section of the targeting space element,

Figure 4c is a vertical cross section of the targeting space element,

Figure 5a is a front view of the velocity measuring space element,

Figure 5b is a horizontal cross section of the velocity measuring space element,

Figure 5c is a vertical cross section of the velocity measuring space element,

Figure 6a is a front view of the coordinating space element,

Figure 6b is a horizontal cross section of the coordinating space element,

Figure 6c is a vertical cross section of one detail in the coordinating space element,

Figure 6d is a horizontal cross section of one detail in the coordinating space element.

Figure 1 shows an embodiment of the invention in which a ball playfield J for practising ball games shows a possible implementation comprising 4 pieces of regular hexagonal game spaces 1 and the edges of these hexagonal game spaces 1 are in touch at one or more sides, and the practising space elements are located at one of the edges of each game space 1. There is a tyre space element 2 installed at shared edge of first game space 1.1 and second game space 1.2. There is a reflex space element 3 installed at shared edge of first game space 1.1 and third game space 1.3. The tyre space element 2 and the reflex space element 3 can be used from both sides due to having them installed at shared edges. There is a targeting space element 4 installed at the second edge of third game space 1.3. There is a velocity measuring space element 5 installed at one edge of fourth game space 1.4. There is a coordinating space element 6 formed at one edge of the tyre space element 2. Preferably, the game spaces 1 are 120-180 m^2 in size and are installed on the natural soil or provided with artificial cladding.

The ball playfield J can be realized in a variety of shapes, sizes and number of game spaces 1 and practising space elements, and the natural soil of the game space 1 may be, for example, a lawn surface, artificial claddings such as slag, concrete or resin depending on needs and space available.

Figures 2a, 2b, 2c show a possible implementation of tyre space element 2 of the ball playfield J according to the present invention. The tyre space element 2 comprises two vertical supports anchored with detachable fasteners to sized foundations from reinforced concrete 20 with stud-bolts 21 through gusset plates 22, and a horizontal support connecting the upper ends of the vertical supports together, and the two vertical supports and the upper horizontal support compose a single rigid support frame 24. Reinforced concrete beam 23 is laid in the ground between the two sized foundations from reinforced concrete 20 to which a T-profile 25 is anchored at ground level to form a lower horizontal support. Steel pipes 26 are welded to the T-profile 25 to make up vertical support connected to steel pull-out joint-pins 27 led through the holes of the upper horizontal support.

The material of the support frame is constructed preferably from two steel U-profile beams welded together. The support frame 24, the T-profile 25, the pipes 26 and the joint-pins 27 can be made of other materials that meet the strength requirements, such as alloyed aluminium or glass fibre reinforced plastic, when the fixing method is chosen according to the selected material.

The practising wall of the tyre space element 2 is constructed by recycled tyres 28 and at the end of each second row recycled tyres 29 with cut edges fixed to each other by using through-bolts, where displacement of the superimposed tyres (28, 29) forming a bonded wall is prevented by removable vertical supports that connect the upper horizontal support and the lower horizontal support, thereby creating a practising wall with diverse and flexible surface which can be used from both sides of the tyre space element 2. The distance between the upper end of the pipes 26 and the lower plane of the

upper horizontal support is greater than the height of the tires 28, 29 which allows the tyres 28, 29 being removed or installed after pulling out joint-pins 27.

Figures 3a, 3b, 3c, 3d show a possible implementation of the reflex space element 3 of the ball playfield J according to the present invention. The reflex space element 3 comprises two vertical supports anchored with detachable fasteners to sized foundations from reinforced concrete 30 with stud-bolts 31 through gusset plates 32, and a horizontal support connecting the upper ends of the vertical supports together, where the two vertical supports and the upper horizontal support compose a single rigid support frame 34. Reinforced concrete beam 33 is laid in the ground between the two sized foundations from reinforced concrete 30 to which a T-profile 35 is anchored at ground level forming a lower horizontal support. Pins 36 are welded to the T-profile 35 as vertical supports.

The practising wall of the reflex space element 3 is constructed from column elements 38 that can be turned around a vertical axis and lifted out, the column elements 38 are connected to the pins 36 and to joint-pins 37 led through holes of the upper horizontal support, and the pins 36 are terminated in hemispherical convex surfaces which surfaces form swivel beddings to allow turning of the column elements 38 on their hemispherical concave surfaces. The column elements 38 have long prism shape, the cross section of the columns is bordered by square shape surface at three sides, semicircle shape at the fourth side, in other words, the column elements 38 have flat surfaces on three sides and curved surface on the fourth side.

The T-profile 35, the pins 36, and the joint-pins 37 can be made of other materials that meet the strength requirements, such as alloyed aluminium or glass fibre reinforced plastic, in which case the fixing method is chosen according to the selected material.

The material of the column element 38 is preferably dense reinforced concrete or fibre reinforced concrete or other material, such as steel, alloyed aluminium or waste material recycled from glass fibre reinforced plastic constructed as hollow grid structure meeting the strength requirements, in which case connection methods must be selected according to the material used. Using of different materials allows the creation of surfaces with different properties.

As shown in Figure 3d elevation of the joint-pins 37 allows that the column elements 38 are lifted out. Elevation of the joint-pins 37 further allows that the column elements 38 are turned around a vertical axis as shown in Figure 3c as an example, and by replacement of the joint-pins 37 the column elements 38 are fixed in a set position, allowing to the practising wall of the reflex space element 3 to have different surface characters, thereby creating a practising wall with varied surface, which can be used from both sides of the reflex space element 3.

Even more diverse surface characters can be achieved by utilizing the examples shown in Figure 3e, 3f. Figure 3f shows an example on cross-section implementation of the column elements 38: the first

side is a flat surface 70, the second side is a curved surface 71, the third side is a conical surface 72, and the fourth side is a flat elastic surface 73 allowing the creation of practising wall sections with different surface characteristics. Column elements 38 may be made up from three or more sides featuring identical or varying surface shapes, including, for example, cylindrical column elements 38, too.

Figure 3e shows an advanced implementation of the reflex space element 3 of the invention, wherein the upper horizontal support of the support frame 34 can be elevated together with fixed joint-pins 39 led through the holes of the horizontal support, allowing that the column elements 38 are turned in groups.

The upper horizontal support at both end is connected to one of lifting gears made up from shaft 91, eccentric 92, and removable crank handle 93 with the help of lifting bars 90 reaching into the vertical supports, which allows in a first raised position the column elements 38 being turned by any angle and in a second raised position the column elements 38 being lifted out, meanwhile lowering the upper horizontal support makes column elements 38 being fixed in a set position.

Figures 4a, 4b, 4c show a possible implementation of the targeting space element 4 of the ball playfield J according to the present invention. The targeting space element 4 comprises two vertical supports anchored with detachable fasteners to sized foundations from reinforced concrete 40 with stud-bolts 41 through gusset plates 42, and a horizontal support connecting the upper ends of the vertical supports together, where the two vertical supports and the upper horizontal support compose a single rigid support frame 44. Reinforced concrete beam 43 is laid in the ground between the two sized foundations from reinforced concrete 40 to which an L-profile 45 is anchored at ground level to form a lower horizontal support.

The practising wall of the targeting space element 4 is divided horizontally and vertically into target sectors superimposed in multiple lines, any of the target sectors at the side of the game space 1 are separated from each other by means of vertical tensioning straps 47 fixed in a detachable way between the upper horizontal support and the lower horizontal support L-profile 45 by tensioning strap bonds 49, and horizontal tensioning straps 47 fixed in a detachable way between the two vertical supports (not shown), and any of the target sectors are separated from each other at the far side of the game space 1 by vertical and horizontal protective nets 48 fixed to a rigid grid structure 46.

Figures 5a, 5b, 5c show a possible implementation of the velocity measuring space element 5 of the ball playfield J according to the present invention. The velocity measuring space element 5 comprises two vertical supports anchored with detachable fasteners to sized foundations from reinforced concrete 50 with stud-bolts 51 through gusset plates 52, and a horizontal support connecting the upper ends of the vertical supports together, where the two vertical supports and the upper horizontal support compose a single rigid support frame 54. Reinforced concrete beam 53 is laid in the ground between

the two sized foundations from reinforced concrete 50 to which an L-profile 55 is anchored at ground level to form a lower horizontal support.

The practising wall of the velocity measuring space element 5 is constructed from stretched elastic fabric 56 which is connected to connection points formed on the two vertical supports and the upper horizontal support by means of springs 58 and it is also connected to connection points formed in the middle section of the two vertical supports by springs with scaled indicator 57, and a target area is marked in the middle of the elastic fabric 56.

Figures 6a, 6b, 6c, 6d show a possible implementation of the coordinating space element 6 of the ball playfield J according to the present invention. Figures 6a, 6b show that the coordinating space element 6 comprises a vertical support 60 implemented as pipe or rod and realized in the form of an embedded pipe or rod inside the vertical support of the support frame 24 of the tyre space element 2 that allows movement vertically and turning around a vertical axis. The coordinating space element 6 can make up attaching to any other practising space element or as a separate vertical support anchored to a foundation in ground in a detachable way.

The lower portion of the vertical support 60 is provided with a cogged section 61 around the circumference which is actuated by a geared lifter 62 which is fixed to the support frame 24 of the tyre space element 2. The coordinating space element 6 comprises a horizontal cantilever 64 rigidly connected to the vertical support 60 which can be turned in any direction around a vertical axis. In addition, a winch 63 is secured to the support frame 24 of the tyre space element 24, which is used for winding and unwinding the hanging tether 66 of the winch 63. The horizontal cantilever 64 is provided with pulley-wheels 65 for guiding the hanging tether 66. The hanging tether 66 is connected to a belt 67 holding a hanging ball 68. Figures 6c, 6d show details of the geared lifter 62: a gearwheel 81 driven by a crank handle 82 is connected to the cogged section 82 which is locked in a given position by a safety bolt 83.

The ball playfield according to the present invention is a physical activity installation for practising ball games integrated into the environment stimulates the imagination of individuals and builds their self-confidence during use and is suitable for breaking down the boundaries between the ages.

Diversity of the ball playfield elements and its unique design arouses the curiosity of children, motivates them to play with balls, stimulates the competitive spirit of the youth and urges adults to become aware of their capabilities.

The invention partly utilizes recyclable industrial products treated as waste by which it protects the environment from harmful materials, and the installation may be set cheaply and quickly, then dismounted and moved to a new place when necessary.

The practising wall of the reflex space element of the ball playfield in the present invention is constructed from column elements that can be turned around a vertical axis and fixed in different positions, and lifted out if necessary, where the advantage of the solution is the variability, adaptation and application to specific needs.

Reference signs

Ball playfield for practising ball games

J ball playfield
1 game space
1.1 first game space
1.2 second game space
1.3 third game space
1.4 fourth game space

2 tyre space element
20 sized foundation from reinforced concrete
21 stud-bolt
22 gusset plate
23 reinforced concrete beam
24 support frame
25 T-profile
26 pipe
27 joint-pin
28 tyre
29 tyre

3 reflex space element
30 sized foundation from reinforced concrete
31 stud-bolt
32 gusset plate
33 reinforced concrete beam
34 support frame
35 T-profile
36 pin
37 joint-pin
38 column element
39 joint-pin
70 flat surface
71 curved surface
72 conical surface
73 flat elastic surface
90 lifting bar
91 shaft
92 eccentric
93 removable crank handle

4 targeting space element
40 sized foundation from reinforced concrete
41 stud-bolt
42 gusset plate
43 reinforced concrete beam
44 support frame
45 L-profile
46 grid structure
47 tensioning strap
48 protective net
49 tensioning strap bond

5 velocity measuring space element
50 sized foundation from reinforced concrete
51 stud-bolt
52 gusset plate
53 reinforced concrete beam
54 support frame
55 L-profile
56 elastic fabric
57 spring with scaled indicator
58 spring

6 coordinating space element
60 vertical support
61 cogged section
62 geared lifter
63 winch
64 horizontal cantilever
65 pulley-wheel
66 hanging tether
67 belt
68 hanging ball
81 gearwheel
82 crank handle
83 safety bolt

Claims

1. A ball playfield for practising ball games which consists of at least one game space and at least one practising space element, the practising space element being directly or indirectly anchored to the ground in a detachable way, the practising space element comprises two vertical supports that are anchored to the foundation formed in the ground by detachable fasteners, an upper horizontal support connecting the two vertical supports together at the top and the two vertical supports and the upper horizontal support compose a single rigid support frame, and a lower horizontal support at ground level along the connecting line between the two vertical supports and fastened to the ground, a practising wall between the upper horizontal support of the support frame and the lower horizontal support fastened at least to the upper horizontal support with detachable fastening elements, **characterized in that** the practising space element is a reflex space element (3), and the practising wall of the reflex space element (3) is constructed from column elements (38) that can be turned around a vertical axis and fixed in different positions, and lifted out if necessary.

2. The ball playfield according to claim 1, characterized in that the practising space element is located at the edge of at least one game space (1), the ball playfield (J) comprises at least one additional game space and one additional practising space element, and the additional practising space element is a tyre space element (2), a targeting space element (4) or a velocity measuring space element (5), and the ball playfield (J) comprises at least one coordinating space element (6).

3. The ball playfield according to claim 1, characterized in that the practising wall of the reflex space element (3) is constructed in such a way that the long prismatic column elements (38) are connected to pins (36) formed on the lower horizontal support and to joint-pins (37, 39) led through holes of the upper horizontal support.

4. The ball playfield according to claim 3, characterized in that the pins (36) are terminated in hemispherical convex surfaces, which surfaces make up swivel beddings with the hemispherical concave surfaces of the bushings on lower part of the column elements (38).

5. The ball playfield according to claim 3, characterized in that the joint-pins (37, 39) when elevated allow the column elements (38) being lifted out or turned and then the column elements (38) getting fixed by replacing the joint-pins (37, 39).

6. The ball playfield according to claim 3, characterized in that the material of the column elements (38) is dense reinforced concrete or fibre reinforced concrete.

7. The ball playfield according to claim 3, characterized in that the material of column elements (38) is glass fibre reinforced plastic recycled from waste plastic material, constructed as hollow grid structure corresponding to the strength requirements.

8. The ball playfield according to claim 3, characterized in that the column elements (38) are of four-sided prism shape, the column elements (38) have flat surfaces on three sides and curved surface on the fourth side.

9. The ball playfield according to claim 3, characterized in that the column elements (38) are of four-sided prism shape, the column elements (38) have flat surface (70) on the first side, curved surface (71) on the second side, conical surface (72) on the third side, and flat elastic surface (73) on the fourth side.

10. The ball playfield according to claim 2, characterized in that the practising wall of the tyre space element (2) is made of recycled tyres (28, 29), where displacement of superimposed tyres (28, 29) forming a bonded wall is prevented by detachable vertical supports that connect the upper horizontal support and the lower horizontal support.

11. The ball playfield according to claim 10, characterized in that the detachable vertical supports are combinations of pipes (26) and pull-out joint-pins (27) where the pipes (26) are connected to the lower horizontal support and to the pull-out joint-pins (27) led through holes of the upper horizontal support.

12. The ball playfield according to claim 11, characterized in that the distance between the upper end of the pipes (26) and the bottom plane of the upper horizontal support is greater than the height of the tyres (28, 29).

13. The ball playfield according to claim 2, characterized in that the practising wall of the targeting space element (4) is divided horizontally and vertically into target sectors superimposed in multiple lines, any of the target sectors at the side of the game space (1) are separated from each other by means of vertical tensioning straps (47) fixed in a detachable way between the upper horizontal support and the lower horizontal support, and horizontal tensioning straps (47) fixed in a detachable way between the two vertical supports, and any of the target sectors are separated from each other at the far side of the game space (1) by vertical and horizontal protective nets (48) fixed to a rigid grid structure (46).

14. The ball playfield according to claim 2, characterized in that the practising wall of the velocity measuring space element (5) is constructed from stretched elastic fabric (56) which is connected to connection points formed on the two vertical supports and the upper horizontal support by means of springs (58) and it is also connected to connection points formed in the middle section of the two vertical supports by springs with scaled indicator (57), and a target area is marked in the middle of the elastic fabric (56).

15. The ball playfield according to claim 2, characterized in that the coordinating space element (6) comprises a vertical support (60) realized in the form of an embedded pipe or rod inside the vertical support of a practising space element or a separate vertical support anchored to a foundation in ground in a detachable way, that allows movement vertically and turning around a vertical axis and comprises

a cogged section (61) around the circumference at the bottom end that is connected to a geared lifter (62) movable by a crank handle (82).

16. The ball playfield according to claim 15, characterized in that a horizontal cantilever (64) that can be turned around a vertical axis is mounted to the vertical support (60) of the coordinating space element (6) to which a hanging ball (68) with adjustable height is attached.

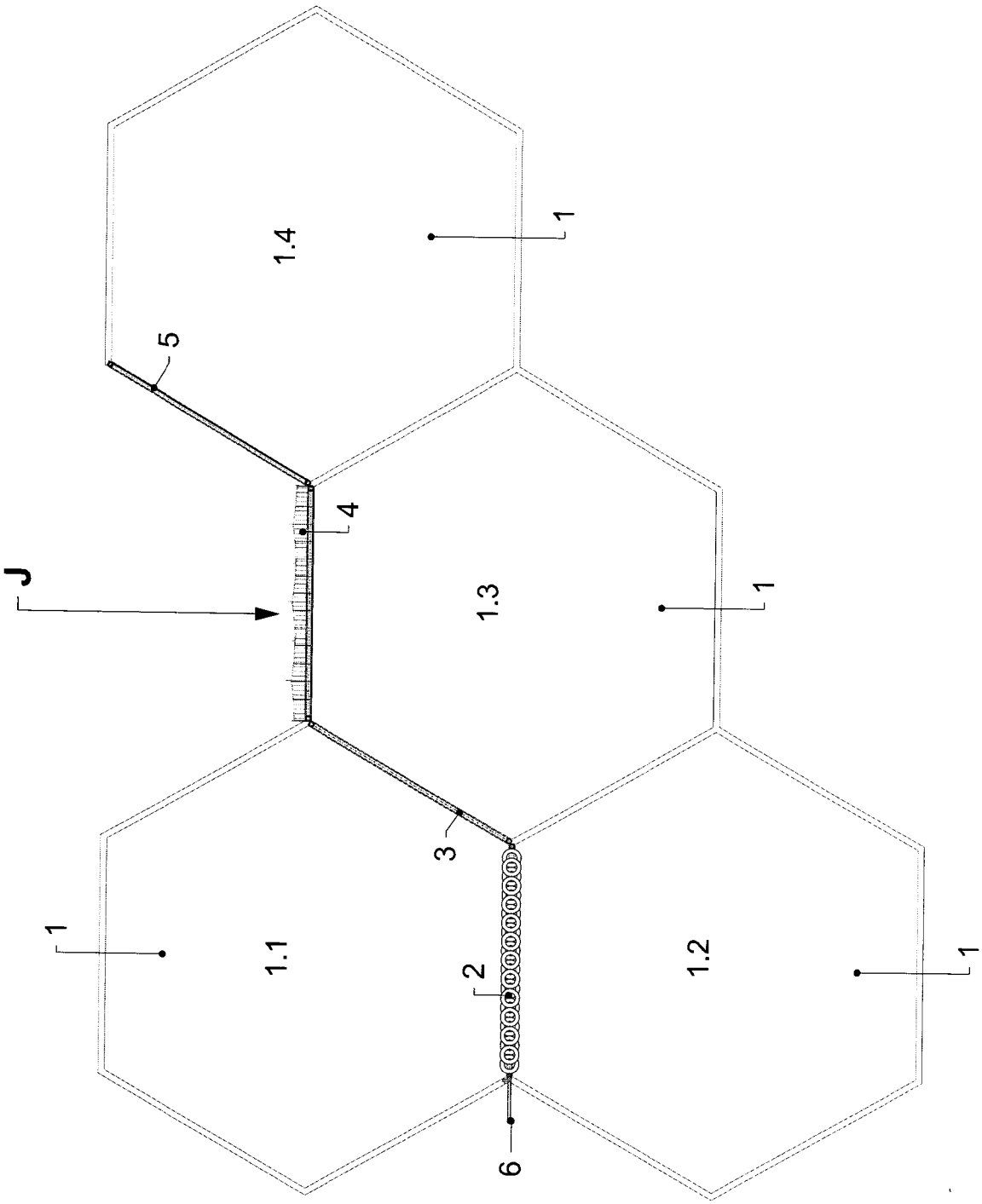

Fig. 1

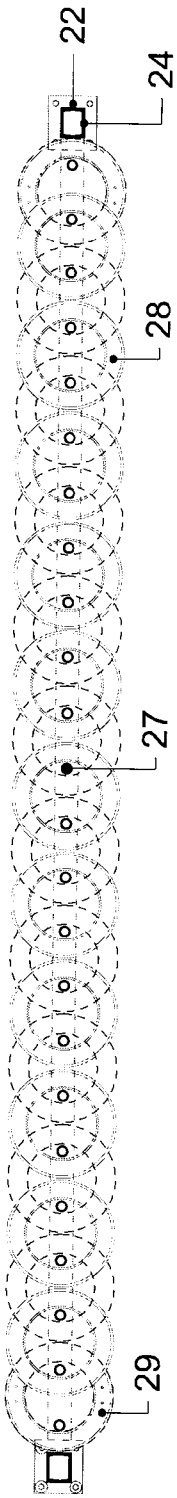

Fig. 2b

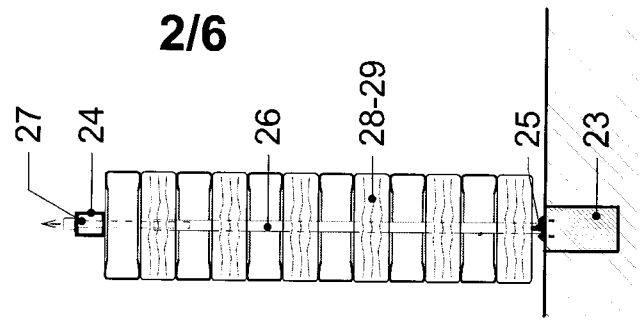

Fig. 2c

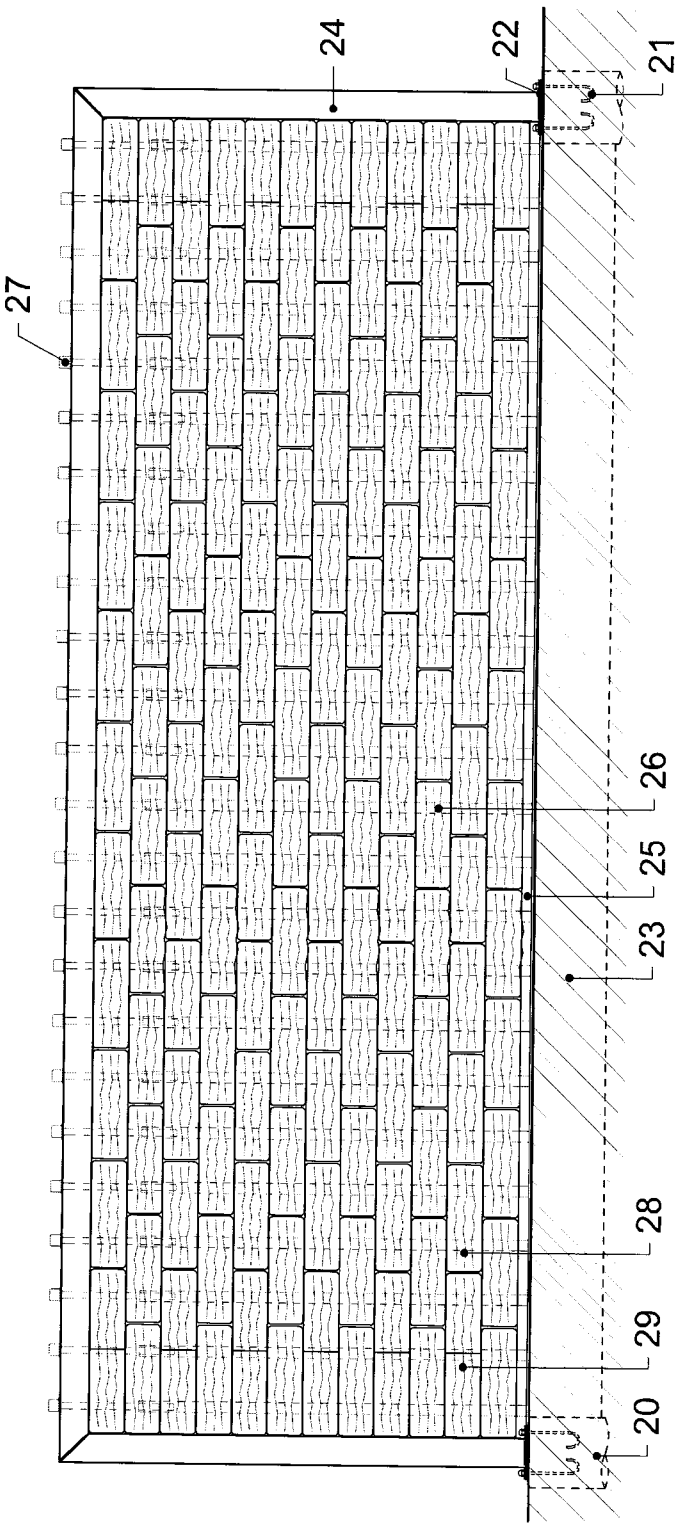

Fig. 2a

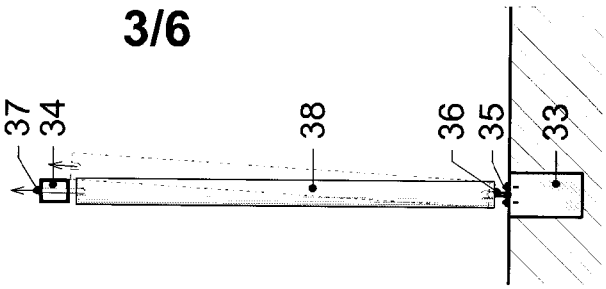

Fig. 3d

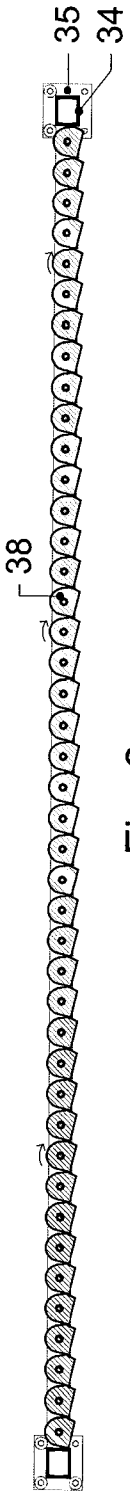

Fig. 3c

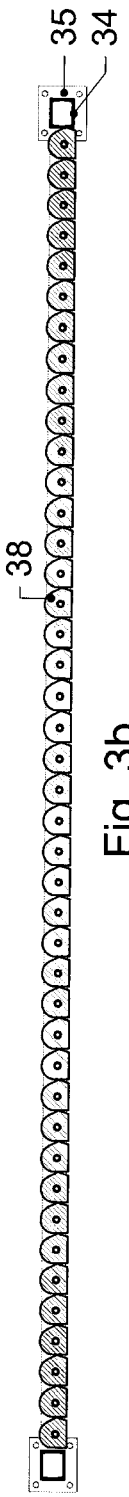

Fig. 3b

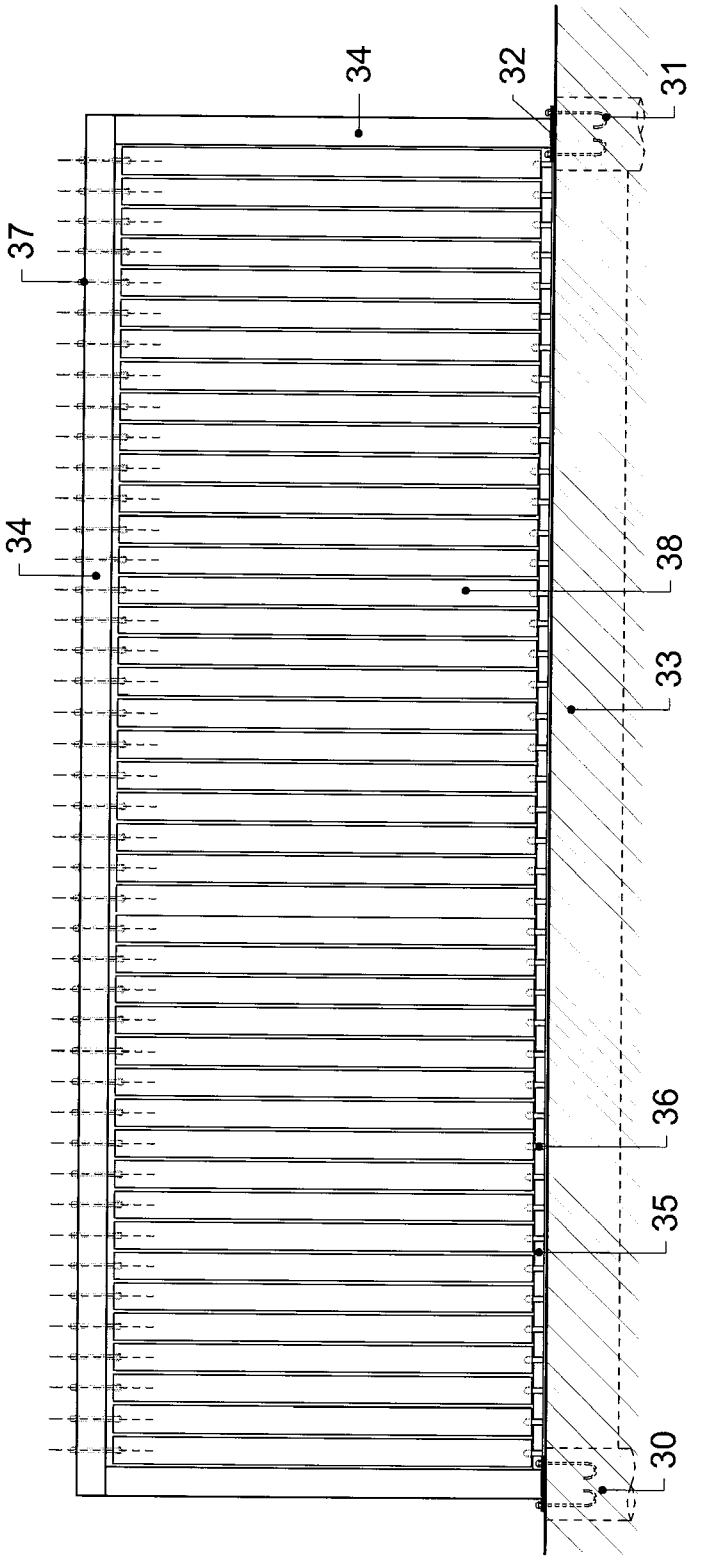

Fig. 3a

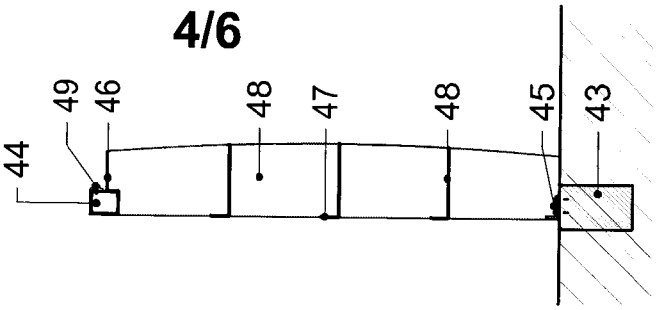

Fig. 4c

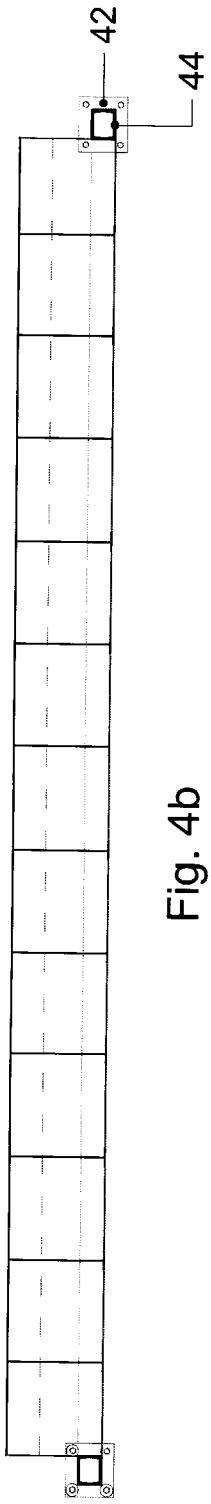

Fig. 4b

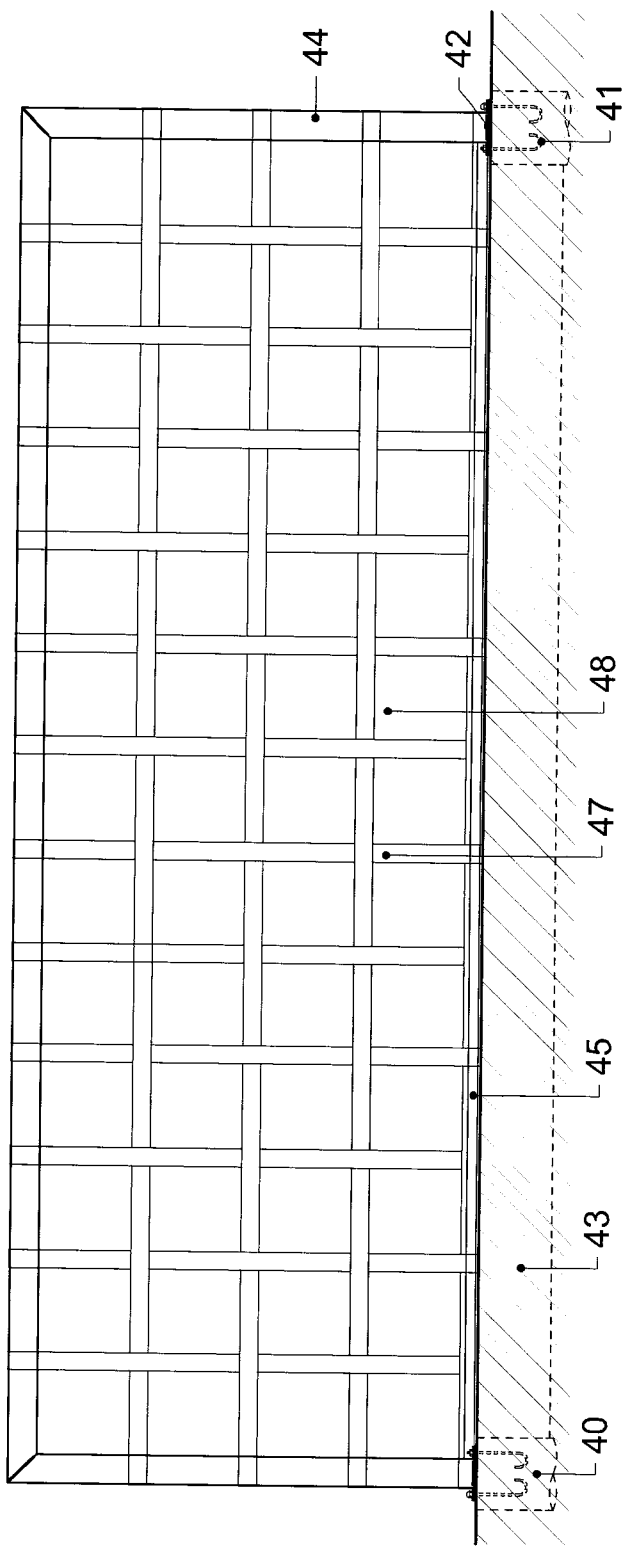

Fig. 4a

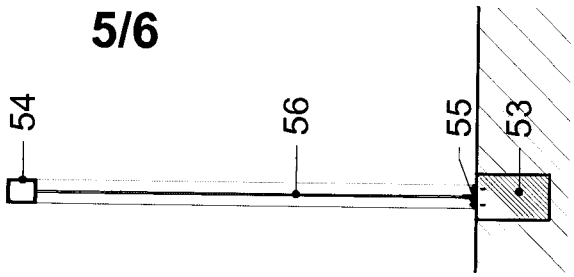

Fig. 5c

Fig. 5b

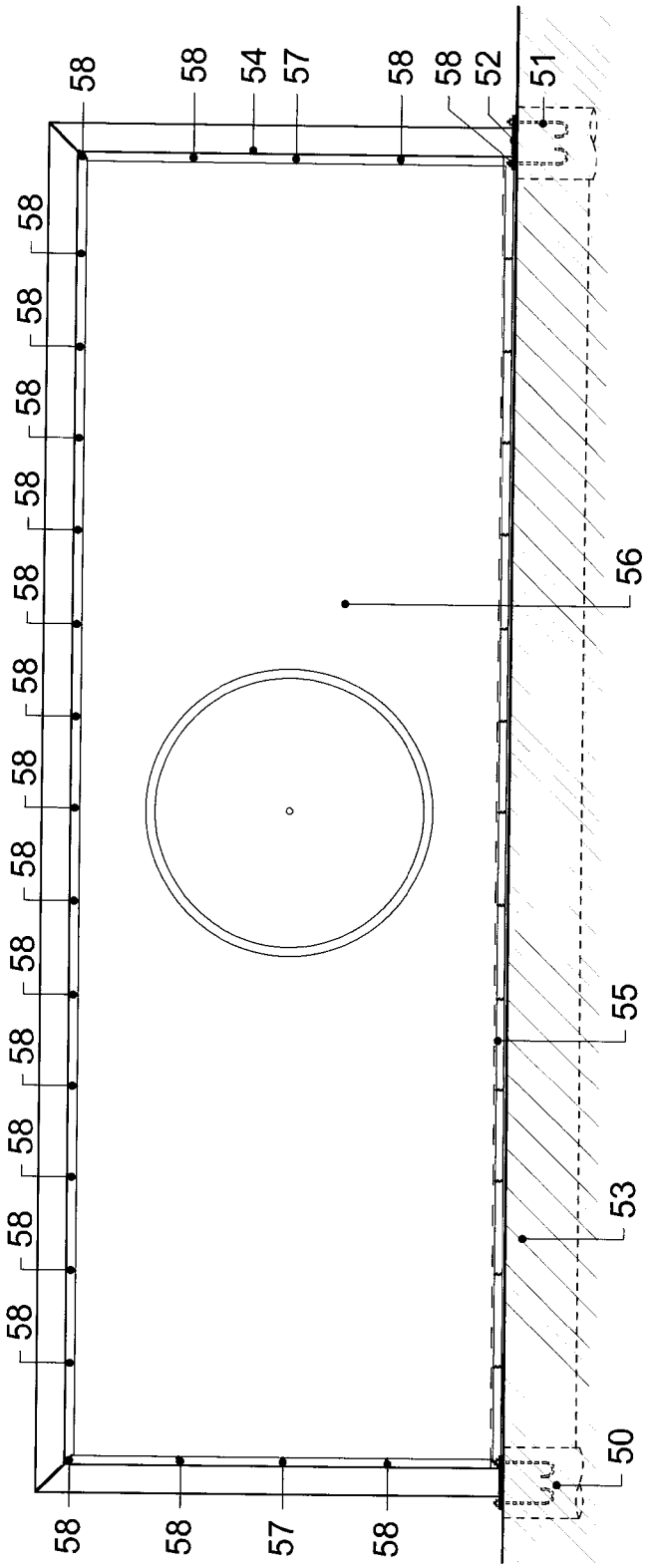

Fig. 5a

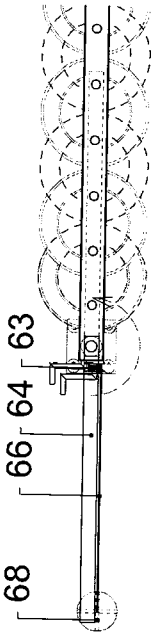

Fig. 6b

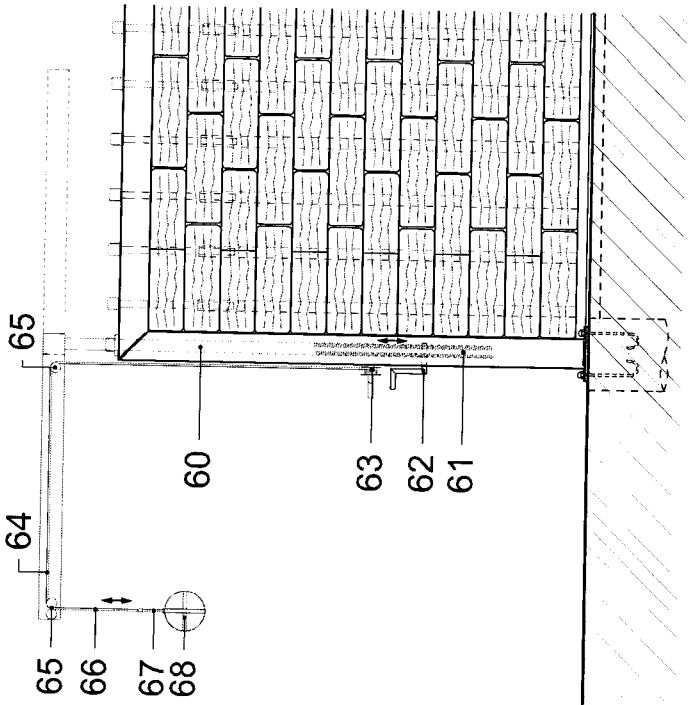

Fig. 6a

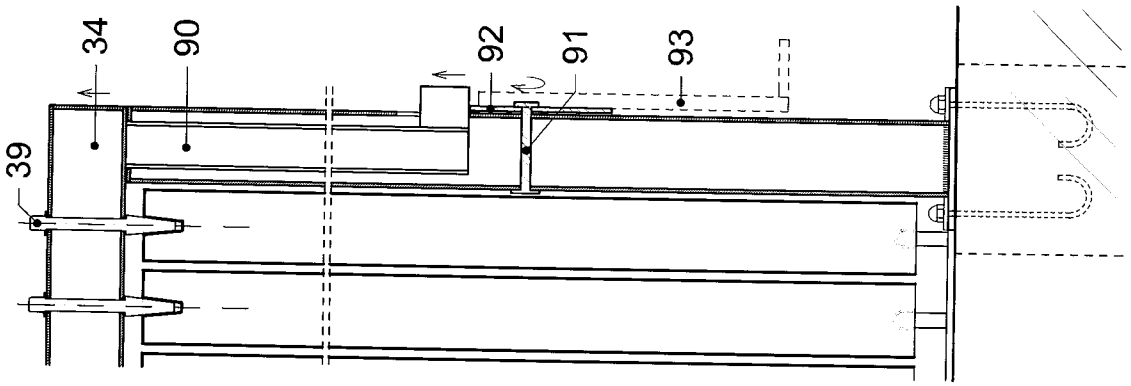

Fig. 3e

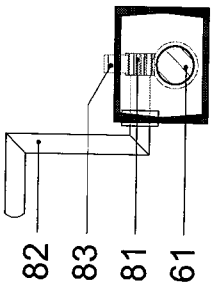

Fig. 6d

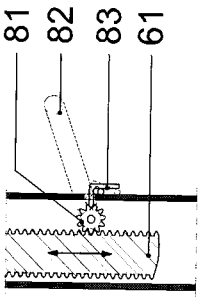

Fig. 6c

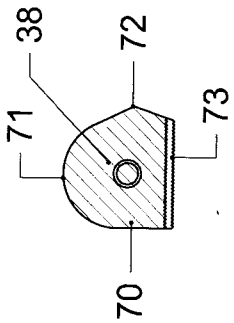

Fig. 3f

INTERNATIONAL SEARCH REPORT

International application No.
PCT/HU2018/000029

A. CLASSIFICATION OF SUBJECT MATTER
A63B 63/00; ***A63B 69/00***
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A63B, A63C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPODOC, WPI, WPIAP, NPL, E-KUTATÁS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2004002585 A1 (ZENARRUZABEITIA, Etxaniz Anton) 08 January 2004 (08.01.2004) abstract; figures 1-3, 15	1-16
A	DE 3239249 A1 (MENDE, Ernst Wilhelm) 26 April 1984 (26.04.1984) page 7-9; figures 1-3	1-16
A	HU 193929 B (HORVATH, Zoltan, HEGEDÜS, Laszlo) 24 April 1989 (24.04.1989) page 2, column 2, lines 23-65; figures 1-3	1-16
A	US 2004072635 A1 (CLARK, Harvey P) 15 April 2004 (15.04.2004) paragraphs [0015]-[0017]; figures 1-3	1-16
A	HU P9005903 A (FAZAKAS, Jozsef) 28 June 1993 (28.06.1993) page 3; figures 1, 2, 5a-5c	1-16

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
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"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
10 October 2018 (10.10.2018)	15 October 2018 (15.10.2018)
Name and mailing address of the ISA/ Visegrad Patent Institute / Branch Office HU H-1081 Budapest, II. János Pál pápa tér. 7., Hungary Facsimile No.	Authorized officer SZILÁGYI, József Telephone No. +36-1-474-5882

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/HU2018/000029

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
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HU 193929	B	1989-04-24	NONE		
US 2004072635	A1	2004-04-15	US 6860825	B2	2005-03-01
HU P9005903	A	1993-06-28	NONE		