(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
7 June 2007 (07.06.2007)

PCT

(10) International Publication Number
WO 2007/063570 A2

(51) International Patent Classification:
A63B 71/02 (2006.01) *A63C 19/06* (2006.01)
A63B 71/06 (2006.01)

(21) International Application Number:
PCT/IT2006/000821

(22) International Filing Date:
27 November 2006 (27.11.2006)

(25) Filing Language: Italian

(26) Publication Language: English

(30) Priority Data:
SS2005A000010 2 December 2005 (02.12.2005) IT

(71) Applicant and
(72) Inventor: **FEDELE, Cino** [IT/IT]; Via Tarragona, 7, I-07041 Alghero (IT).

(74) Agent: **TURINI, Laura**; P.za S. Giovanni, 8, I-56038 Ponsacco (IT).

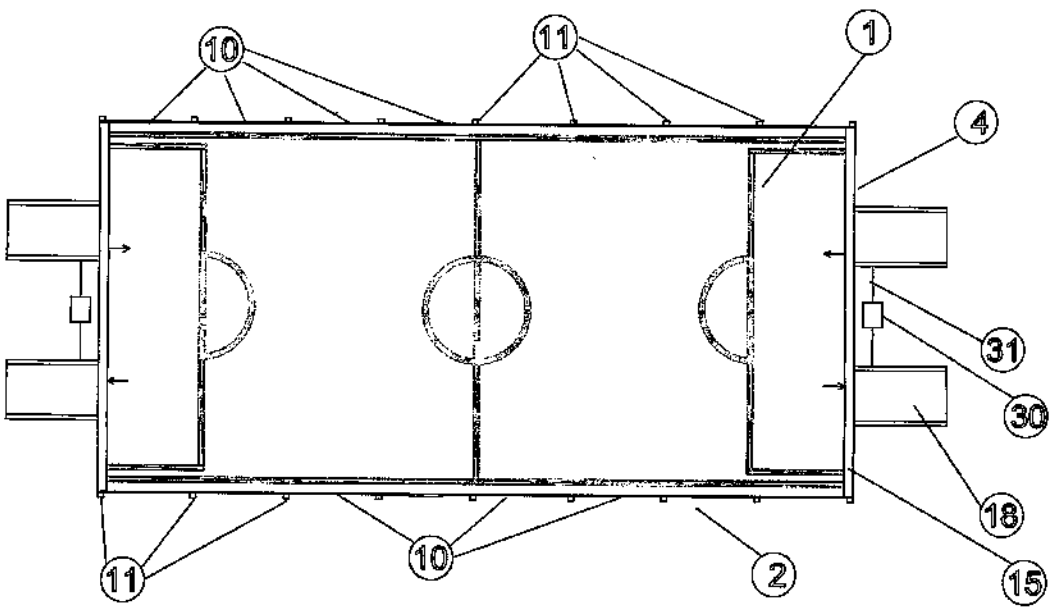
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: STRUCTURE WITH MOVABLE WALLS FOR GAMES AND TRAINING SESSIONS, PARTICULARLY FOR FOOTBALL TRAINING



(57) Abstract: This concerns a structure preferably made up of four walls of which two are movable and can define the playing area, in such a way as to be able to carry out the training sessions intended.

WO 2007/063570 A2

STRUCTURE WITH MOVABLE WALLS FOR GAMES AND TRAINING SESSIONS, PARTICULARLY FOR FOOTBALL TRAINING

Technical Field

The invention relates to the sector of equipment for athletic and sports games.

Background Art

In the structures intended for accommodating games and athletic or sports and training sessions, the spaces are delimited by lines, dividers or walls placed in stationary positions and also the game apparatus is organised in positions that are stationary or at most variable in a limited number of predefined positions.

During training it is often useful for coaches to use only one part of the playing area that they can delimit by means of skittle pins or other movable signals. A similar need arises when the same playing areas are used both by adults and by children. With these systems, when the game requires the use of a ball, it is easy for the ball to escape from the area in which the game is being played, consequently interrupting or slowing down the exercises and thus decreasing their value.

At present, football technique is perfected and improved on the basis of regular training founded on the application of the three play stages comprising the reception, control and passing of the ball between players and coach(es).

Any variation in terms of repetitiveness, speed and rapidity of movements in receiving, controlling and

passing the ball, that are reflected in speed, rotation and trajectory, depends only on the speed of execution.

Another system to increase the speed and repetitiveness of the technical exercise is that of establishing a minimum number of plays to be carried out in a certain time period. Everything is dominated by the subjective element, or rather by the desire and the technical skill of the athletes to increase the pace of the exercises.

In order to prevent the pace of the ball from being imposed subjectively by the individual athletes, the present invention takes from the athletes themselves, thus also from their assigned coaches, the possibility of interfering with the circulation of the ball and consequently with the management technique of this circulation.

The coach, in fact, can establish up until the start of the training sessions the measurement of the surface and the paths on its interior that the training session should follow.

The maximum time during the course of which the surface will remain constant, as well as the time arc and the measurement limit within which the exercise area will be reduced will also remain stable.

The progressive reduction of the surface on the interior of which the athletes are moving while kicking the ball towards the two goals and passing the ball using the wall that produces fast, frequent and regular trajectories, far superior to traditional systems, allows the athletes to train themselves to evaluate, by correcting, the speed, rotation and path of the ball whether it is in the stage

of a pass, a drop-kick or a shot towards the two goals, that in the reception and control stage of the ball occurs with direction changes and dribbling on all the paths that have been established, projected or marked on the artificial grass surface. All the game stages allow the athlete to touch the ball with all parts of the foot, outside of the foot - outside - inside - inside of the foot - instep, they can thus learn how far their exercises are from the ideal values of technical coordination; The progressive reduction of the surface forces the athletes to search for athletic moves and technical solutions in an ever-decreasing time and space arc; consequently the physical movements and the reactions required from the athletes will produce an increasingly automatic result. In other words, athletes will move instinctively and at the same time naturally. Therefore it is evident, from a certain point of view how the athlete will have no option other than to adapt from a variable time to a constantly high time whose only limit is given by the technical-physical characteristics of the athlete.

The structure as devised and disclosed essentially extends to the acquisition and to the improvement of the basic techniques of football, also in the complete absence of qualified instructors, by favouring the acquisition of greater perception, coordination, reactivity, speed, precision and power, obtaining from the athletes the maximum result in the minimum time possible.

This means more muscle fibres (increasingly stronger) and greater acquisition of nervous fibres, or rather improved nerve activation.

Although designed for football, the structure can however advantageously be used for all athletic and sporting games that involve the distribution and collecting of balls or other objects, as a means to help the athletes to control their positions, to improve the precision and speed of movements or to simulate adversary responses.

Disclosure of the Invention

The structure, that is the object of the invention, consists of a rectangular shaped playing area delimited by four walls. One (or two) of the walls are not fixed to the ground and can be moved in one direction in order to widen or reduce the playing area. Markings or symbols can be placed on the walls that simulate apparatus or game situations, for example the goals of a football pitch, the baskets of a basketball court, the net of a volleyball court etc.

Moreover, devices responsive to pressure, photocells or proximity sensors can be placed on the walls in predefined positions. These types of devices show the player a signal (light or acoustic) if they are hit, signals that will be interpreted positively or negatively depending on their position and the rules of the game established. Similarly, the pressure sensors and the photocells control and indicate when playing lines or limits have been passed.

With particular reference to the Figures, one possible embodiment of the invention is shown as an example.

The installation illustrated is designed to be used in football sport centres for amateurs and professionals, with the aim of improving the physical and technical-athletic qualities of athletes and in recreational-sport

centres with the aim of providing entertainment and recreation with the possibility of diversifying use to other sports such as basketball and tennis.

The structure delimits a playing field (1) with an artificial grass surface and markings characteristic to football fields. The surface is laid on a base opportunely prepared and rendered stable, such as for example rubble on which a net is rested that is arc-welded and cast in concrete.

Along the two longer sides of the field, two stationary walls (2) are placed. These walls are made with steel posts (11) and plexiglass panels (10). The posts are anchored to the surface of the field by means of fixing plates. The panels (10) are fixed to the posts by means of bolts. The plexiglass panels have the function of returning the ball when it hits them, with sufficient elasticity so as to simulate if necessary the passing of a teammate or rival and they therefore extend to a useful height (a) for said aim. Higher up, where it is not necessary to ensure the elastic impact of the ball, but rather only to prevent the ball from exiting the area, the panels are substituted with a nylon net (12), fixed to support posts (13) made of aluminium, mounted on steel posts (11), the net has the function of preventing the ball from exiting and extends in height, as generally is the case in playing fields, until it reaches a height of 7 metres or more according to the dimensions of the field.

On one of the two stationary walls there is an access door (23) to the playing field.

The two shorter sides of the field are also delimited by two walls (4) made with fixing metal posts (14) and plexiglass panels (10). The posts (14) in this case are welded at both ends to a rectangular frame (15), of equal length to the smaller side of the field and with a height (a) equal to that of the stationary walls. The frame (15) does not rest on the ground, but rather is anchored to two bases that are also metal (16) by means of support cross-pieces (17), fixing plates and bolts. Two counter-weights made in asbestos cement (18) rest on the bases. The two bases (16) are each mounted on two pairs of rubber wheels (19) (20).

One of the two pairs of wheels (19) of each base is connected to an electric motor (30) by means of a transmission shaft (31) with a turn reduction unit and a compensator.

The net (12) for protection is mounted over the frame (15), as for the stationary walls, supported by intermediate posts (13) fixed to the base on the frame (15).

A football goal (21) of regulation dimensions is marked on the plexiglass panels of the movable walls.

On the movable walls on the interior and exterior of the marking of the goal, and on the stationary wall, light and acoustic devices (22) responsive to pressure are distributed that respond if they are hit by the ball and that are activated intermittently. These devices are also marked by numbers attributed on the basis of the difficulty of the shot.

During the football training sessions the coach can choose to work at a different distance from the goal, limiting the playing area by means of the movable walls and furthermore the coach can activate as desired some of the light and acoustic devices, according to the objectives of the practice exercise.

The movement of the walls and the activation of light and acoustic devices can be controlled with an automated control system according to an established program or with a remote control.

The structure is rectangular with dimensions 16.20 X 8.20 LM for a total height of 7.00 LM.

The larger and smaller sides will be delimited by plexiglass walls.

The lower sides that accommodate the marking of the two regulation football goals will be framed on a movable structure with solid rubber wheels 0.20 connected to a transmission axis, controlled by an electric motor with turn reduction unit and wheel turn compensator. A remote-control and the photocells allow the pre-programming of the space and the time within which the game will be played.

The two goals moving towards each other progressively reduce and widen the playing field, increasing the ball circulation speed until reaching a state in which the latter imposes a movement on the athletes that is no longer reasonable, but rather closer to an instinctive response and therefore unpredictable.

The interior of the goals will be connected to intermittent light sensors that allow the development of

perception and that facilitate the counting of the athletes' points, on the basis of which numbers will be marked that will indicate the difficulty level assigned to them. Athletes will increase the score in relation to the largest number of centres that they will have made in a certain time arc.

This type of structure will be made up of the following structures:

1. Playing field: (Fig. 1)

- Paths, exercises, motor skills, applied technical coordination
- Base in rubble of different granulometry;
- Arc-welded net;
- Concrete base with 10 cm thickness
- Artificial grass surface with playing field markings.

2. Stationary wall: (Fig. 2)

- Steel plates with which the aluminium posts will be fixed with dimensions of 10 cm x 10 cm with a height of 4 1m with a space of 1.92 1m for the entire length of the field.

Between the distance of one post and another the following elements will be interposed:

- Plexiglas panel with a thickness of 2.5 or 5.0 cm with dimensions of 1.92 1m X 4.00 1m;

The panels will be anchored to the posts by means of screw brackets and bolts in steel;

- Aluminium pole of 5 cm x 5 cm with a height of 3 1m

- Rhomboidal nylon net with a thickness of 0.5 cm in the upper part anchored to the pole by means of bands of the same material;
- Numbered acoustic sensors.

3. Movable wall: (Fig.3 Fig.4)

- Aluminium box of 20 cm x 20 cm;
- Plexiglas panel with thickness of 2.5 or 5.0 cm with dimensions of 1.40 lm X 3.40 lm;
- Rhomboidal nylon net with a thickness of 0.5 cm in the upper part anchored to the post by means of a box with bands of the same material.
- Aluminium post of 5 X 5c m with a height of 3 lm;
- Asbestos cement counter-weights
- 4 rubber wheels with a 20 cm diamenter;
- Motor transmission axis;
- Electric motor with turn reducer and wheel turn compensator;
- Numbered acoustic sensors;
- The panels will be anchored to the posts by means of screws and bolts in steel.

The measurements of the structure are variable according to the needs, the locations and the use that is to be made of the structure.

With reference to the Figures of the annexed drawings, a structure according to the present invention is characterised in that it includes at least two, preferably four, walls (2) (4) that delimit a playing area (1), of which at least one of said walls is movable (4) and that on at least one, preferably on more than one of said

walls, playing references are identified (21) and that detection and/or signalling devices (22) are positioned on the boundary walls.

Advantageously, said playing references are made up of markings or signals (21) made on the walls or said markings or signals are projected onto the walls so that they can be modified easily.

Advantageously, the movable wall or the movable walls, opposite or adjacent, are moved in order to widen or reduce in one direction or in both directions the playing space.

Advantageously, one wall of the structure in question includes one or more constructive modules made by means of posts, panels, and/or metallic net.

Said panels are made with plastic material with a resistance and elasticity suitable for the use of the structure.

At least part of the posts of said constructive modules of the stationary walls are steadily anchored to the ground.Advantageously, one wall of the structure in question includes one or more support frames and one or more panels fixed to said frames directly or by means of fixing cross-pieces and/or plates.

Advantageously, a support frame consists of a metallic or plastic section, or more metallic or plastic sections joined to each other by welding, on which other elements can be fixed, having the function of maintaining joined in a stable way the resulting assembly. Said support frame of a stationary wall is anchored to the ground directly or by means of support stanchions or bases.

Advantageously, a movable wall includes a wall as previously described and a support and movement apparatus of the wall in the direction orthogonal to it.

Advantageously, a support and movement apparatus can include one or more support bases to which is fixed at least one support frame and/or at least part of the posts of the constructive modules with which the wall is made, it can comprise one or more guiding systems perpendicular to the surface of the wall, it can comprise one or more continuous screw systems, one or more tie-rods, cables or chains and finally it can be suspended from a load carrying structure rather than rested on the ground.

Advantageously, said support base rests on wheels.

Advantageously, a movable wall is moved manually or thanks to a power-operated system with a remote or local control system.

Advantageously, one or more references and/or a signalling or detection device placed on walls is used for establishing game objectives and rules, it is responsive to contact of the athletes and/or to the their playing apparatus, it is responsive to the passing of the athletes and/or to the their playing apparatus in an area defined close to it, it is used to detect the achievement of game objectives and/or errors, it is used for giving penalties and/or scores, finally it includes an apparatus for transmission and/or reception of signals that allows the visualisation/or control of the situation remotely.

Advantageously, an access door to the playing area is obtained on one or more walls.

Brief Description of the Drawings

Figures 1 to 5 show one possible technical solution for the execution of the invention in the case of a structure for football training sessions with stationary walls on the longer sides and movable walls on both shorter sides.

Fig. 1 shows a plan view of the structure

Fig. 2 shows the front view of one of the stationary walls

Fig. 3 shows one of the movable walls, seen frontally from the outside (Fig. 3a) and from the inside (Fig. 3b) of the structure.

Fig. 4 shows the characteristics of the movable wall in a side view.

Figure 5 shows in detail the movable wall seen from outside.

Claims

1. Structure for games and training session **characterised in that** it includes at least two, preferably four, walls (2) (4) that delimit a playing area (1), of which at least one of said walls is movable (4);

2. Structure according to claim 1 **characterised in that** on at least one, preferably on more than one of said walls, playing references (21) are identified.

3. Structure for games and training sessions according to one or more of the previous claims **characterised in that** detection and/or signalling devices (22) are placed on the delimiting walls.

4. Structure for games and training sessions according to claim 2 **characterised in that** said game references are made up of markings or signals (21) made on the walls.

5. Structure for games and training sessions according to claim 2 **characterised in that** said game references consisting of markings or signals are projected onto the walls so that they can be modified easily.

6. Structure for games and training sessions according to one or more of the previous claims **characterised in that** the movable wall is moved in order to widen or reduce in one direction the playing area.

7. Structure for games and training sessions according to on or more of the previous claims **characterised in that** the movable walls are two opposite walls that are moved in order to widen or reduce in one direction the playing space

8. Structure for games and training sessions according to one or more of the previous claims **characterised in that**

the movable walls are two adjacent walls that are moved in order to widen or reduce, in both directions, the playing area.

9. Structure according to one or more of the previous claims **characterised in that** one wall includes one or more constructive modules made by means of posts, panels, and/or metallic net.

10. Structure according to claim 9 **characterised in that** said panels are made with plastic material of a resistance and elasticity suitable for the use of the structure.

11. Structure according to claim 9 **characterised in that** at least part of said posts of the constructive modules of the stationary walls are anchored in a stable way to the ground.

12. Structure according to one or more of the previous claims **characterised in that** one wall includes one or more support frames and one or more panels fixed to said frame directly or by means of fixing cross-pieces and/or plates.

13. Structure according to the previous claim **characterised in that** one support frame consists of a metallic or plastic section, or more metallic or plastic sections joined to each other by welding, on which other elements can be fixed, having the function of maintaining joined in a stable way the resulting assembly.

14. Structure according to claim 12 **characterised in that** one or more support frames of a stationary wall are fixed to the ground directly or through support stanchions or bases.

15. Structure according to one or more of the previous claims **characterised in that** a movable wall includes a

wall as described in the previous claims and a support and movement apparatus of the wall in a direction orthogonal to it.

16. Structure according to the previous claim **characterised in that** a support and movement apparatus includes one or more support bases to which are anchored at least one support frame and/or at least part of the posts of the constructive modules with which the wall is constituted.

17. Structure according to the previous claim **characterised in that** the support base rests on wheels.

18. Structure according to one or more of the previous claims **characterised in that** a support and movement apparatus includes one or more guiding systems perpendicular to the surface of the wall.

19. Structure according to one or more of the previous claims **characterised in that** a support and movement apparatus includes one or more continuous screw systems.

20. Structure according to one or more of the previous claims **characterised in that** a support and movement apparatus includes one or more tie-rods, cables or chains.

21. Structure for games and training sessions according to one or more of the previous claims **characterised in that** a wall and/or a support and movement apparatus is suspended from a load bearing structure rather than resting on the ground.

22. Structure according to one or more of the previous claims **characterised in that** a movable wall is moved manually.

23. Structure according to one or more of the previous claims **characterised in that** a movable wall is moved thanks to a power-operated system with a remote or local control.

24. Structure according to one or more of the previous claims **characterised in that** one or more references and/or a signalling or detection device placed on the walls is used for establishing game objectives and rules.

25. Structure according to one or more of the previous claims **characterised in that** one or more detection and/or signalling devices is responsive to the contact of the athletes and/or to the their playing apparatus.

26. Structure according to one or more of the previous claims **characterised in that** one or more detection and/or signalling devices is responsive to the passing of the athletes and/or to the their playing apparatus in a defined area near to them.

27. Structure according to one or more of the previous claims **characterised in that** one or more detection and/or signalling devices are used for detecting the achievement of game objectives and/or errors.

28. Structure according to one or more of the previous claims **characterised in that** one or more detection and/or signalling devices are used for giving penalties and/or scores.

29. Structure according to one or more of the previous claims **characterised in that** one or more detection and/or signalling devices includes an apparatus for the transmission and/or reception of signals that allows the visualization and/or control of the situation remotely.

30. Structure according to one or more of the previous claims **characterised in that** an access door to the playing area is obtained on one or more walls.

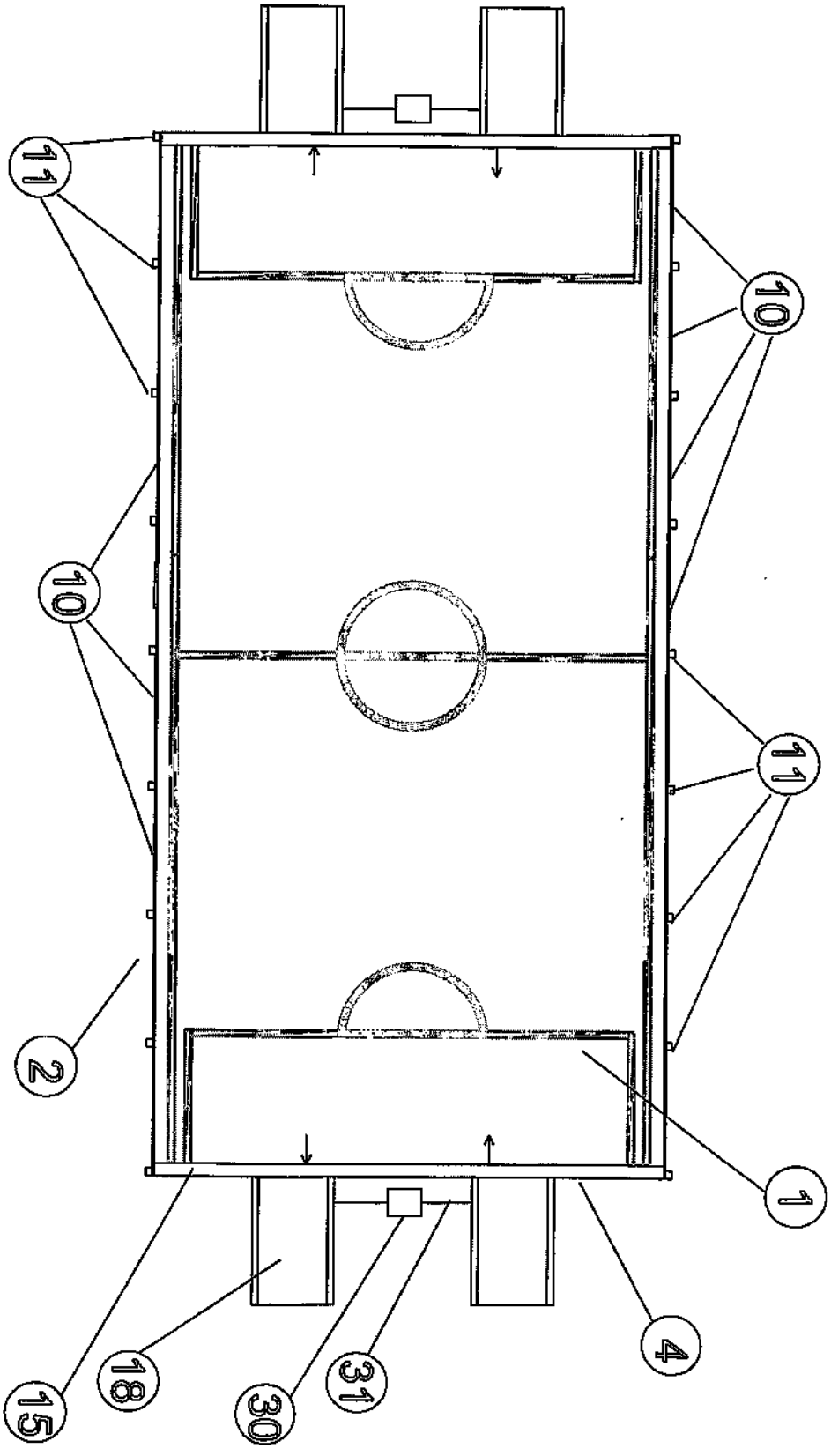


Fig. 1

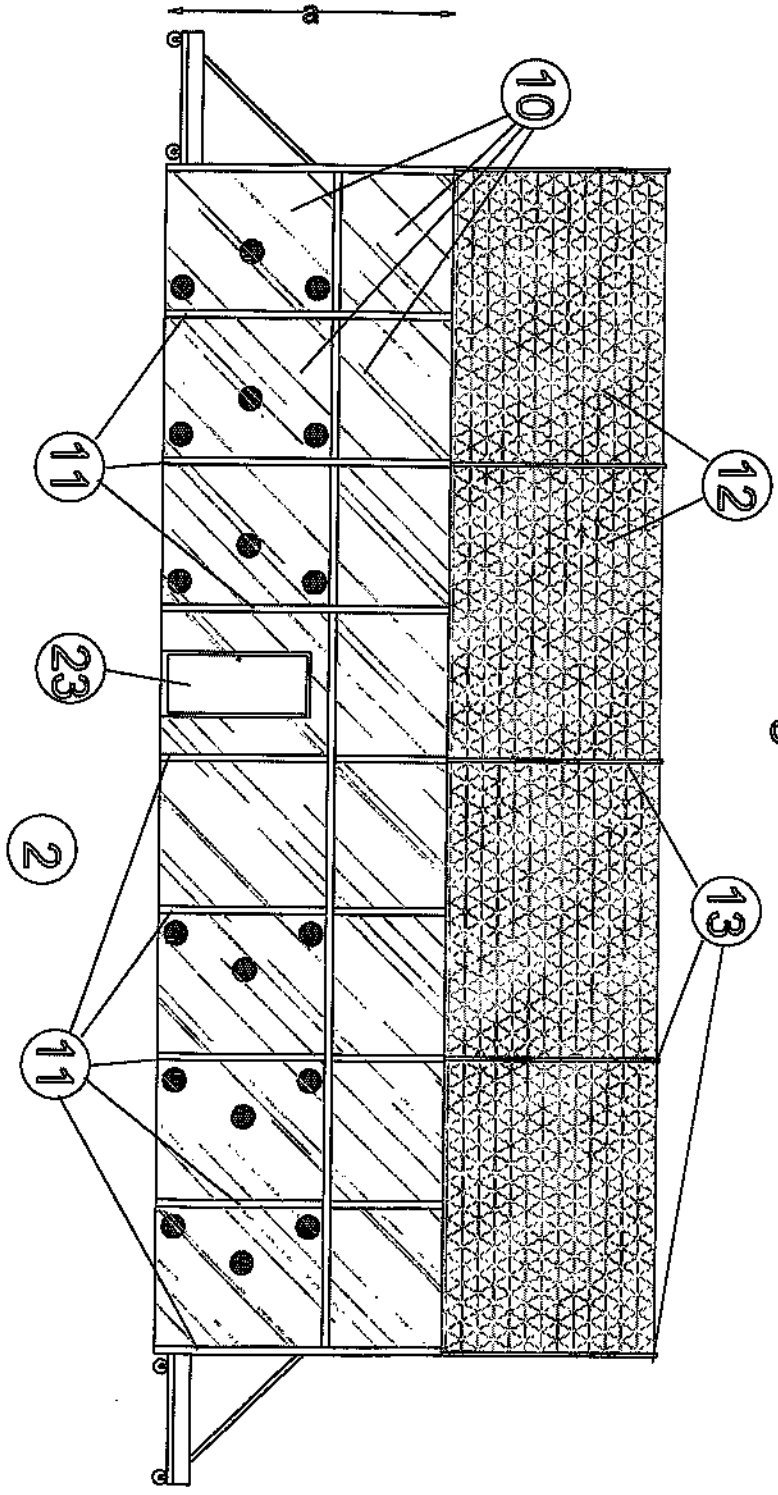


Fig.2

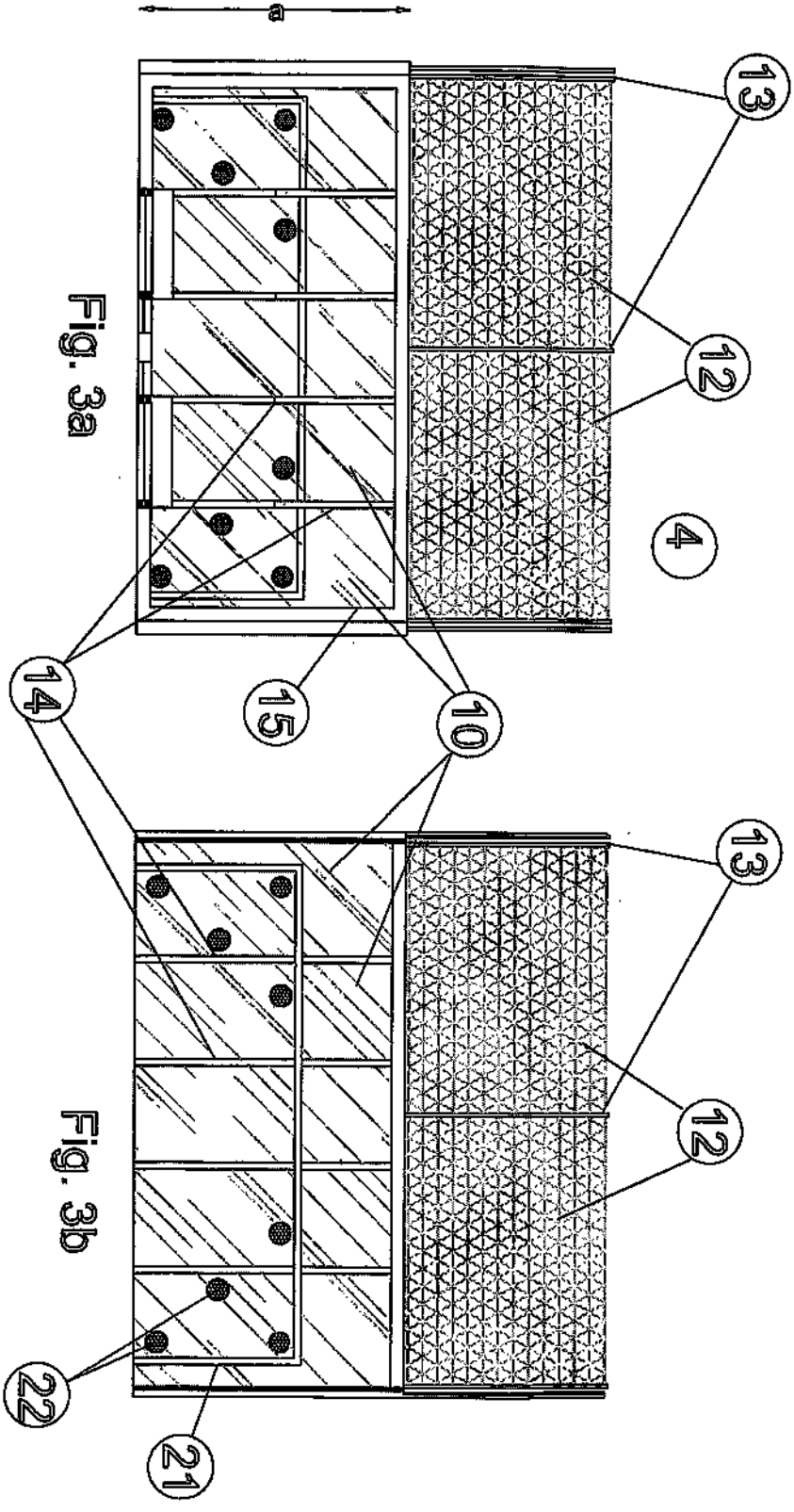
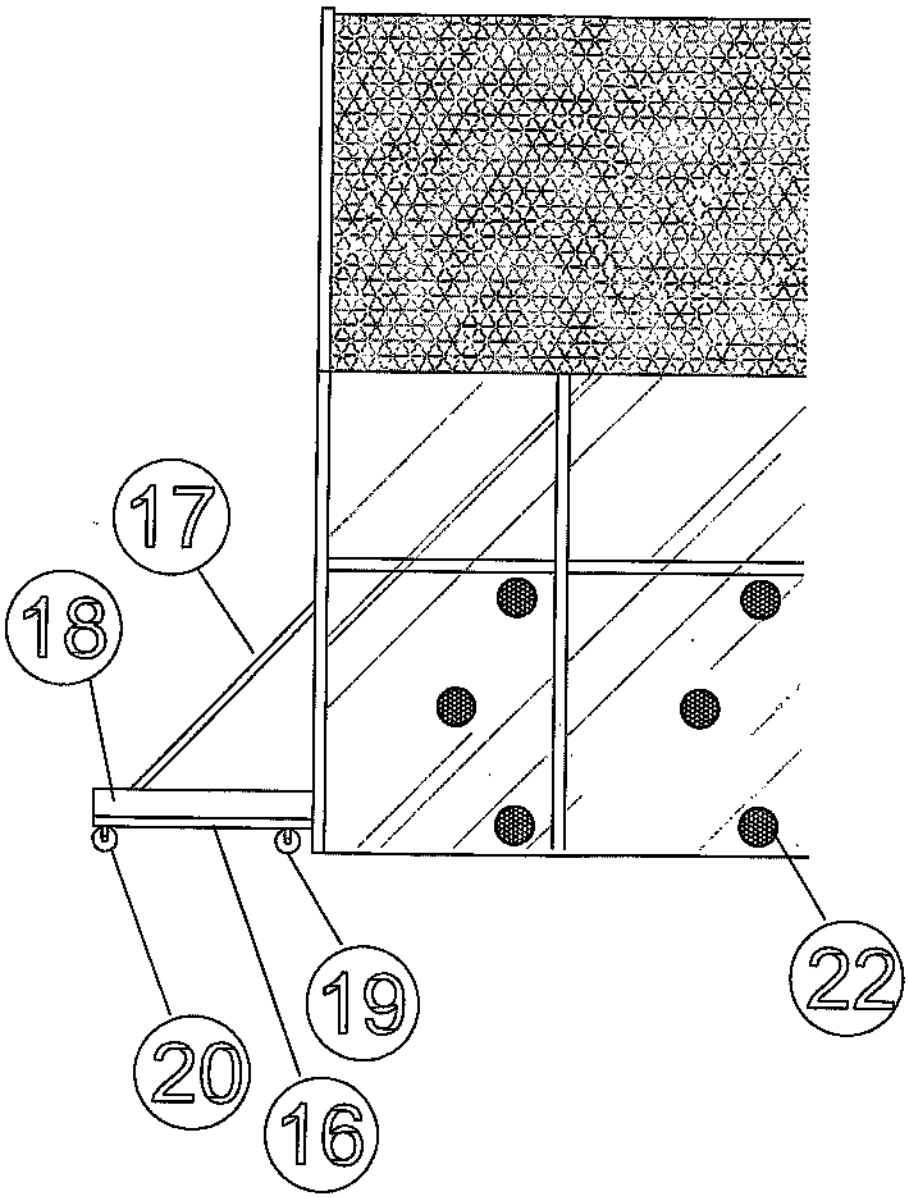


Fig. 3

Fig. 3a

Fig. 3b

Fig. 4



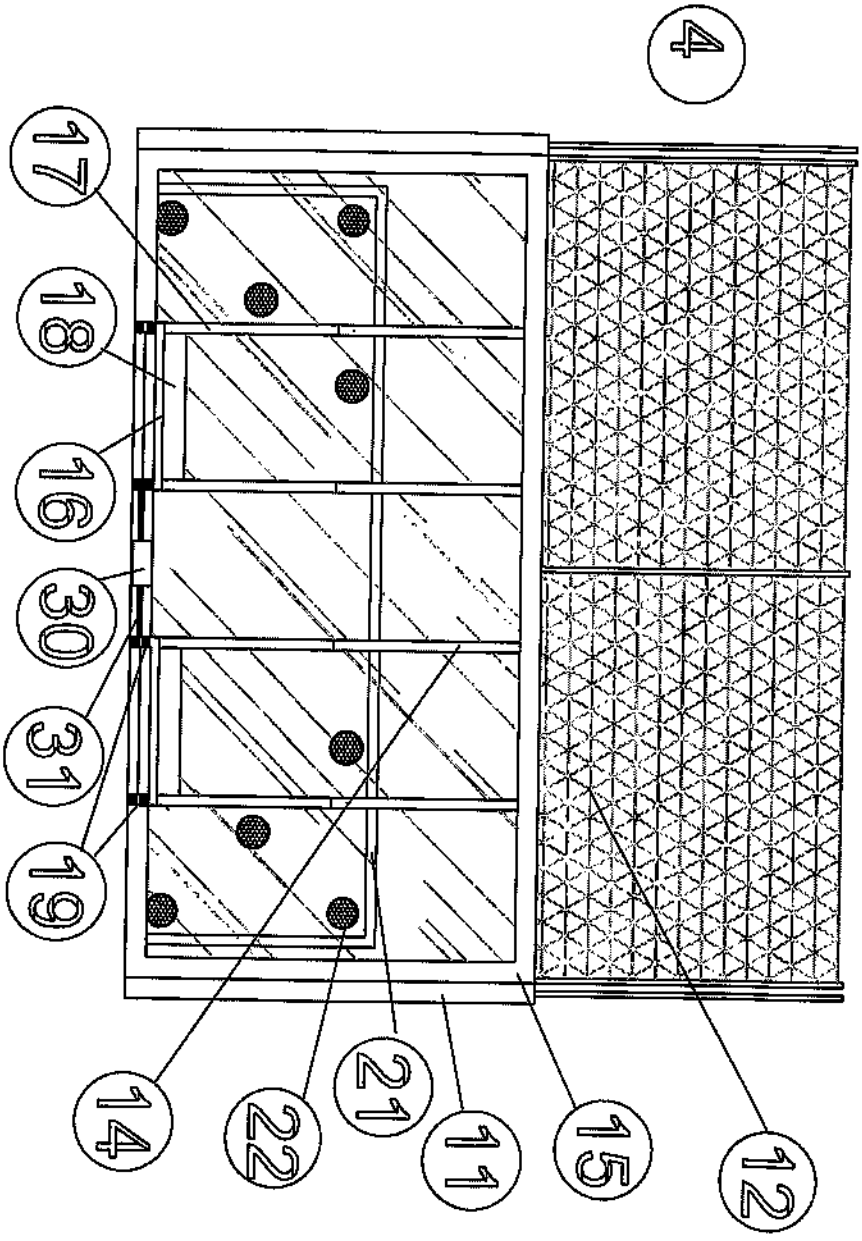


Fig. 5