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(54) INCLINED STRUCTURE OF COURT FLOOR FOR AUTOMATIC SUPPLY IN BALL GAME

GENEIGTE STRUKTUR DES SPIELFELDBODENS FÜR DIE AUTOMATISCHE ZUFUHR IM
BALLSPIEL

STRUCTURE INCLINÉE DE PLANCHER DE TERRAIN POUR ALIMENTATION AUTOMATIQUE
DANS UN JEU DE BALLE

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Description**BACKGROUND OF THE INVENTION****1. Field of the invention**

[0001] The present disclosure relates to an inclined structure of a court floor having a new structure for easily collecting and automatically supplying balls used in practice.

2. Description of the Related Art

[0002] In recent years, an increasing number of people are enjoying ball games such as basketball, futsal, volleyball, tennis, and foot volleyball.

[0003] However, since the court of a stadium where such ball games take place is configured to form a horizontal plane, the balls used in the practice are scattered and spread out around the court when a player is practicing. There is a problem wherein the balls scattered during practice as such must be collected again, which is very inconvenient.

[0004] Therefore, a new method for solving such a problem is required.

[0005] As a prior art related thereto, there is Granted Korean Patent Publication No. 10-0394902.

[0006] EP 3246075 A discloses a ball supply apparatus including a housing coupled to the upper portion of the column structure, wherein a top portion of housing is partially opened, wherein the housing is divided by a partition into a ball storage portion and a ball discharge portion, wherein a bottom face of the ball storage portion is inclined downward toward the ball discharge portion, wherein a first opening is formed in a bottom of the ball discharge portion, and a second opening is formed in the partition at a lower portion thereof; a rotatable opening/closing plate rotatably coupled to the partition. Further it describes an inclined play field having a ball guide groove line for collecting training balls.

SUMMARY OF THE INVENTION

[0007] The present disclosure is directed to providing an inclined structure for a court floor having a new structure for easily collecting and automatically supplying balls used in practice.

[0008] Accordingly the invention relates to an inclined structure of court floor as claimed in claim 1.

[0009] According to an inclined structure of a court floor structure for automatic supply in a ball game according to the present disclosure, the ball used for practice can be rolled down outwardly along the slope of the court, and then be collected in the collecting ditch and gathered in one place, so there is no need to collect scattered balls separately.

BRIEF DESCRIPTION OF THE DRAWINGS**[0010]**

5 FIG. 1 is a plan view showing an inclined structure of a court floor according to the present disclosure, FIG. 2 is a side sectional view showing an inclined structure of a court floor according to the present disclosure,
10 FIG. 3 is a plan view showing a mold for constructing a support layer of an inclined structure of a court floor according to the present disclosure, FIG. 4 is a side sectional view of a mold for constructing a support layer of an inclined structure of a court floor according to the present disclosure,
15 FIGS. 5 to 10 are plan views showing a modified example of an inclined structure of a court floor according to the present disclosure.

20 DETAILED DESCRIPTION OF THE EMBODIMENTS

[0011] The present invention will now be described in detail with reference to the accompanying drawings.

[0012] FIG. 1 and FIG. 2 illustrate a court structure of a ball game stadium according to the present invention, which is applied to a court A of a stadium having a length of 12 m and a width of 6 m.

[0013] According to this structure, the upper surface of the court A is inclined outwardly, and a collecting ditch 1 inclined to one side is formed on the outer circumference of court A so that the ball used for playing or practice rolls outwardly and is collected in the collecting ditch 1, and then gathered to one side along the slope of the collecting ditch 1.

[0014] At this time, as shown in FIG. 1, the court A is formed such that the entire court A is inclined in a front-rear direction about the central portion.

[0015] In describing in more detail, the court A forms a support layer 11 having an upper surface inclined in the front-rear direction on the bottom surface 10, the support layer 11 being prepared with various materials that do not affect sports games such as concrete, ocher and the like. A flooring 12 is configured by being laminated on the upper surface of the support layer 11.

[0016] To this end, the bottom surface 10 is shown as being firmly hardened so that the ground surface forms a plane, or on the ground surface, a separate member is laminated on the top surface of the ground surface as to form a plane.

[0017] In addition, the support layer 11 is constructed to have an upper surface that is inclined at an exact angle via the following steps: providing a mold 13 so as to correspond to an outer circumferential portion of the court A, placing a plurality of support members 14 configured to form an upper surface having an inclined surface corresponding to an inclined surface of the support layer 11 into the mold 13 such that the plurality of support members 14 are spaced apart in an mutually lateral direction,

laying concrete into the mold 13, evening out the upper surface of the concrete so as to be corresponding to the inclined surface of the support member 14 and then hardening, finishing the upper surface of the hardened concrete using a grinder or an abradar or the like.

[0018] In addition, the inclination of the support layer 11 is formed in a range of 0.1° to 3° , preferably 0.5° to 1.5° . As such, the inclination of the support layer 11 is set in the range of 0.1° to 3° to solve the problems that occur. When the inclination of the supporting layer 11 is 0.1° or less, it forms a plane state which makes it impossible to gather balls used in a sports game to a collecting ditch 1 and when the inclination of the supporting layer 11 is 3° or more, the inclination (slope) is so great that the sports games cannot be performed freely.

[0019] Referring to an example wherein the inclination is set from 0.5° to 1.5° , in the case of a wooden material having small frictional force set to 0.7° , balls that have air pumped in, for example, a soccer ball, volleyball, basketball and the like are gathered in a collecting ditch 1, but a tennis ball, baseball, or pingpong ball and the like do not have the appropriate surface material or size and thus are hard to roll around.

[0020] In the case of a wooden, urethane, or PP(plastic) flooring having an inclination of 1.5° , with slight difference in time all balls of ball games are gathered in the collecting ditch 1.

[0021] Generally, starting from an inclination of 1.5° or more, it becomes uncomfortable to play the ball games, and once the inclination reaches around 3° , there is much difficulty in playing the sports.

[0022] In a case of a grass stadium, even when set to 3° , the ball couldn't reach the collecting ditch.

[0023] Because such setting of inclination changes the stress fatigue of a player and the possibility of collecting a ball, it is important to set the a preferable inclination.

[0024] As shown in FIGS. 3 and 4, the mold is configured by assembling a wooden panel in a quadrilateral frame shape.

[0025] The support member 14 is formed by welding a metal pipe having high strength.

[0026] In addition, when the upper surface of the concrete laid in the mold 13 is evened out, by pushing a wide bull floating tool having a lateral width that is bigger than the spacing of the support member 14 in a front-rear direction while placed on top of the upper surface of the support member 14 to widely spread the concrete, the upper surface of the concrete can form a plane having the same slope as that of the upper surface of the support member 14.

[0027] Since the bull floating tool is generally used when evening out the upper surface of concrete placed on a bottom surface, a detailed description thereof will be omitted.

[0028] A flooring 12 is made of wood, synthetic resin or rubber and is formed in a small panel shape so that a plurality of the same are adhered and fixed on the upper surface of the support layer 11 so as to cover the support

layer 11, or is applied so as to have a constant thickness on the upper surface.

[0029] At this time, the type of the flooring 12 depends on the type of the stadium.

5 **[0030]** Further, the inclination angle of the court A is appropriately adjusted according to the type of ball and the type of the flooring 12.

10 **[0031]** In addition, the collecting ditch 1 is provided with a ball feeding means 2 for providing the ball collected by the collecting ditch 1 to the players, so that the ball collected in the collecting ditch 1 is automatically supplied to the players.

15 **[0032]** According to the inclined structure of the court floor configured as described above, the ball used for practice rolls outwardly along the slope of the court A, as indicated by an arrow in FIG. 1, and then is collected in the collecting ditch 1 and gathered in one place. Thus there is an advantage that there is no need to collect scattered balls separately.

20 **[0033]** Further, the court A comprises a support layer 11 made of a concrete material having an inclined upper surface on the bottom surface 10 and a flooring 12 configured by laminating wood, synthetic resin or rubber on the upper surface of the support layer 11. Thus, there is an advantage that the inclined surface of the court A can be freely adjusted.

25 **[0034]** Particularly, there is an advantage that the support layer 11 and the flooring 12 placed on top of the upper surface of the support layer 11 can be formed to be an exact plane surface via the following steps: providing a mold 13 so as to correspond to an outer circumferential portion of the court A, placing a plurality of support members 14 configured to form an upper surface having an inclined surface corresponding to an inclined surface of the support layer 11 into the mold 13 such that the plurality of support members 14 are spaced apart in an mutually lateral direction, laying concrete into the mold 13, evening out the upper surface of the concrete so as to be corresponding to the inclined surface of the support member 14 and then hardening, finishing the upper surface of the hardened concrete using a grinder or an abradar or the like.

30 **[0035]** In the present embodiment, the entirety of the court A is inclined in the front-rear direction with respect to the center portion. However, as shown in FIG. 5, only half of the court A may be inclined in the front-rear direction.

35 **[0036]** Further, as shown in Fig. 6, the entire upper surface may be inclined downward towards opposite sides, or only opposite sides of the upper surface may be inclined downward towards opposite sides as shown in FIG. 7. In addition, as shown in FIGS. 8 and 9, opposite sides and rear sides can be configured to be inclined downward towards the opposite sides and the rear sides, respectively. Further, as shown in FIG. 10, a court structure may be to have a uniform inclination in all directions about a center or may be formed of a plurality of inclined layers along circumferences of circles with radii increas-

ing according to the distance from the center.

[0037] Alternatively, the court A may be formed in a dome shape inclined downward to an outer side from the center portion.

[0038] It is preferable that the portion where the inclination (slope) starts in the court A having the above-described configuration, that is, the portion where the corners meet (the portion indicated by a dotted line in the figures) is rounded and gently formed.

<Description of Symbols>

[0039]

- A. Court
- 1. Collecting ditch
- 10. Bottom surface

Claims

1. An inclined structure of a court floor of a court for automatic supply of balls of a ball game, wherein a top surface of the court floor is formed to enable ball games to be played and is inclined such that a ball used for playing or practice rolls outwardly and is collected, the inclined structure comprising: a support layer (11) having an inclined upper surface the support layer (11) is provided to correspond to an outer circumferential portion of the court (A), wherein an inclination of the support layer (11) is formed in a range of 0.1° to 3°, and the inclined structure further comprising: a mold (13) comprising a wooden panel assembled into a quadrilateral frame shape; a support member (14) arranged inside the mold (13) and formed by welding a metal pipe, the support member having an inclined upper surface corresponding to the inclined surface of the support layer (11); concrete laid inside the mold (13), wherein the upper surface of the concrete is evened out and hardened so as to form a surface having a same slope as the inclined upper surface of the support member (14) such that the upper surface of the concrete corresponds to the inclined upper surface of the support member (14), the upper surface of the hardened concrete is finished through a grinder or an abrader, and a flooring (12) selected from wood, synthetic resin or rubber formed in a panel shape on the upper surface of the support layer (11) so as to be adhered and fixed to cover the support layer (11), wherein the inclined surface of the support layer (11) is configured to have an entire upper surface inclining downwards towards opposite sides, or configured to have a dome shape inclining downwards to an outer side from a center portion, such that the ball is collected in a collecting ditch (1) inclined to one side of the outer circumferential portion of the court (A) and then gathered to one side along the slope of the col-

lecting ditch (1).

Patentansprüche

1. Geneigte Struktur eines Spielplatzbodens eines Spielplatzes zur automatischen Lieferung von Bällen eines Ballspiels, wobei eine obere Oberfläche des Spielplatzbodens ausgebildet ist, um das Spielen von Ballspielen zu ermöglichen, und geneigt ist, so dass ein Ball, der zum Spielen oder Üben verwendet wird, nach außen rollt und gesammelt wird, wobei die geneigte Struktur Folgendes umfasst: eine Trägerschicht (11) mit einer geneigten oberen Oberfläche, wobei die Trägerschicht (11) vorgesehen ist, um einem äußeren Umfangsabschnitt des Spielplatzes (A) zu entsprechen, wobei eine Neigung der Trägerschicht (11) in einem Bereich von 0,1° bis 3° gebildet wird, und die geneigte Struktur ferner Folgendes umfasst: eine Form (13), umfassend eine Holzplatte, die zu einer viereckigen Rahmenform zusammengesetzt ist; ein Trägerelement (14), das innerhalb der Form (13) angeordnet und durch Schweißen eines Metallrohrs ausgebildet ist, wobei das Trägerelement eine geneigte obere Oberfläche aufweist, die der geneigten Oberfläche der Trägerschicht (11) entspricht; innerhalb der Form (13) verlegten Beton, wobei die obere Oberfläche des Betons ausgeglichen und gehärtet wird, um eine Oberfläche mit der gleichen Neigung wie die geneigte obere Oberfläche des Trägerelements (14) zu bilden, so dass die obere Oberfläche des Betons der geneigten oberen Oberfläche des Trägerelements (14) entspricht, die obere Oberfläche des ausgehärteten Betons durch eine Schleifmaschine oder einen Schleifer fertiggestellt wird, und einen Bodenbelag (12), ausgewählt aus Holz, Kunstharz oder Gummi, der in einer Plattenform auf der oberen Oberfläche der Trägerschicht (11) ausgebildet ist, um zur Abdeckung der Trägerschicht (11) verklebt und befestigt zu werden, wobei die geneigte obere Oberfläche der Trägerschicht (11) konfiguriert ist, um eine gesamte obere Oberfläche aufzuweisen, die nach unten zu gegenüberliegenden Seiten geneigt ist, oder konfiguriert ist, um eine Kuppelform zu haben, die von einem Mittelabschnitt nach unten zu einer Außenseite geneigt ist, so dass der Ball in einem Sammelgraben (1) gesammelt wird, der zu einer Seite des äußeren Umfangsabschnitts des Spielplatzes (A) geneigt ist, und dann entlang der Neigung des Sammelgrabens (1) zu einer Seite gesammelt wird.

Revendications

1. Structure inclinée d'un plancher de terrain d'un ter-

rain pour la fourniture automatique de balles d'un jeu de balle, dans laquelle une surface supérieure du plancher de terrain est formée pour permettre de jouer à des jeux de balle et est inclinée de sorte qu'une balle utilisée pour jouer ou s'entraîner roule vers l'extérieur et est collectée,

la structure inclinée comprenant : une couche de support (11) ayant une surface supérieure inclinée, la couche de support (11) est prévue pour correspondre à une partie circonférentielle extérieure du terrain (A),

dans laquelle une inclinaison de la couche de support (11) est formée dans une plage de 0,1° à 3°, et la structure inclinée comprenant en outre : un moule (13) comprenant un panneau en bois assemblé en une forme de cadre quadrilatéral :

un élément de support (14) agencé à l'intérieur du moule (13) et formé par soudage d'un tuyau métallique, l'élément de support ayant une surface supérieure inclinée correspondant à la surface inclinée de la couche de support (11) ;

du béton posé à l'intérieur du moule (13), dans laquelle la surface supérieure du béton est nivelée et durcie de manière à former une surface ayant la même pente que la surface supérieure inclinée de l'élément de support (14) de sorte que la surface supérieure du béton corresponde à la surface supérieure inclinée de l'élément de support (14), la surface supérieure du béton durci est finie à l'aide d'une meuleuse ou d'une machine d'abrasion, et

un revêtement de sol (12) choisi parmi le bois, la résine synthétique ou le caoutchouc formé en forme de panneau sur la surface supérieure de la couche de support (11) de manière à être collé et fixé pour recouvrir la couche de support (11), dans laquelle la surface inclinée de la couche de support (11) est configurée pour avoir une surface supérieure complète s'inclinant vers le bas vers des côtés opposés, ou configurée pour avoir une forme de dôme s'inclinant vers le bas vers un côté extérieur à partir d'une partie centrale, de sorte que la balle soit collectée dans un fossé de collecte (1) incliné d'un côté de la partie circonférentielle extérieure du terrain (A) puis rassemblée sur un côté le long de la pente du fossé de collecte (1).

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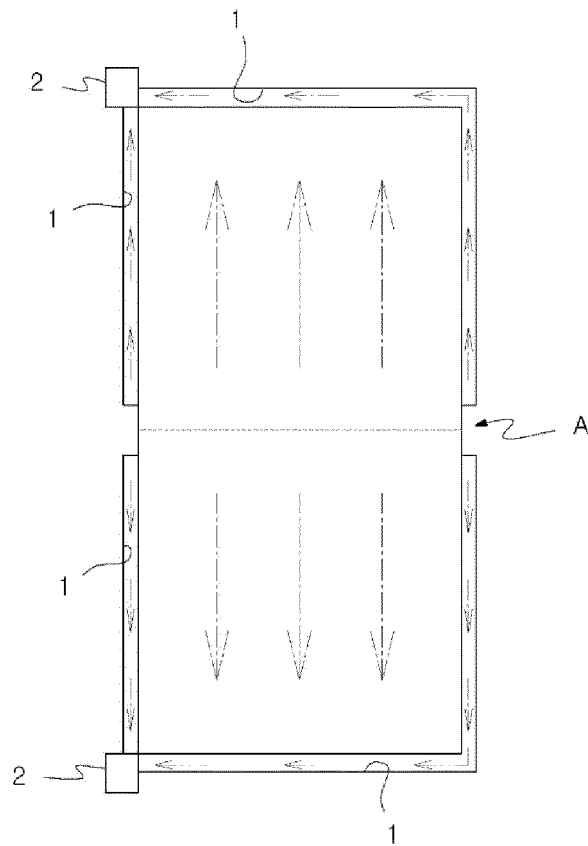


FIG. 1

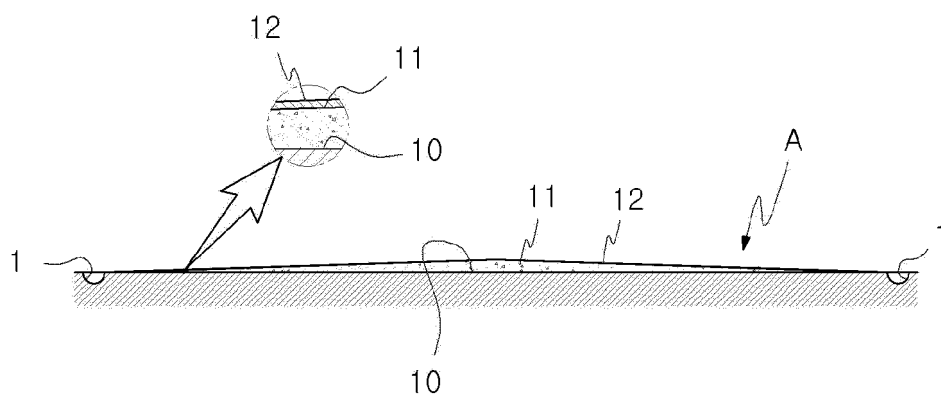


FIG. 2

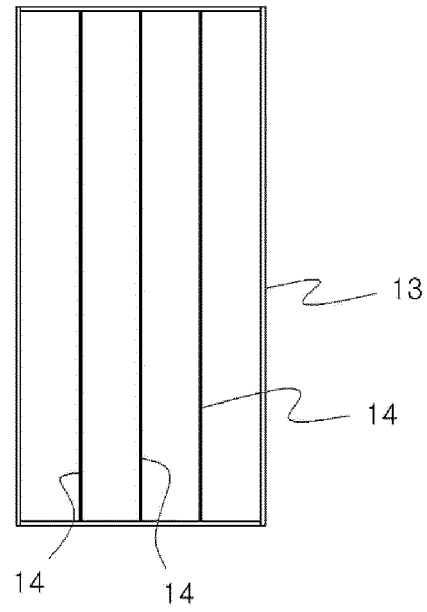


FIG. 3

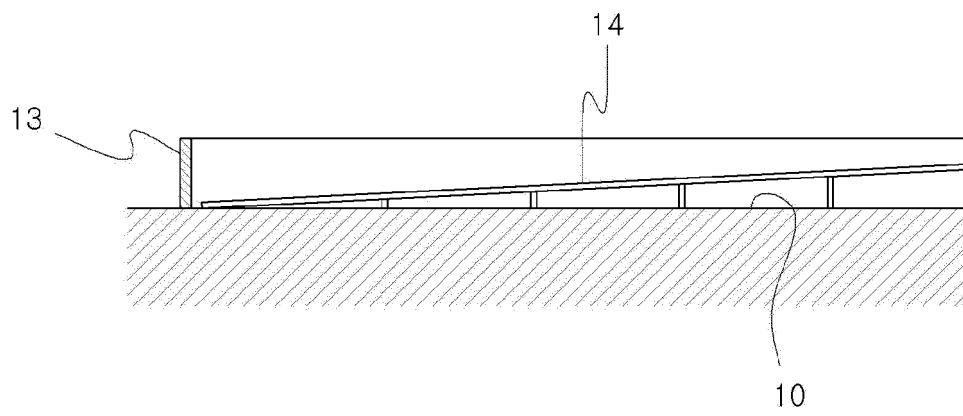


FIG. 4

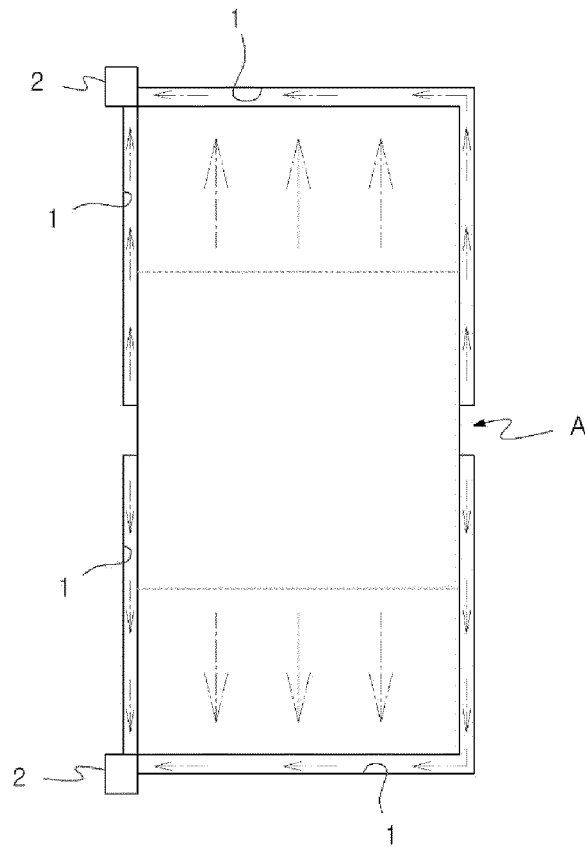


FIG. 5

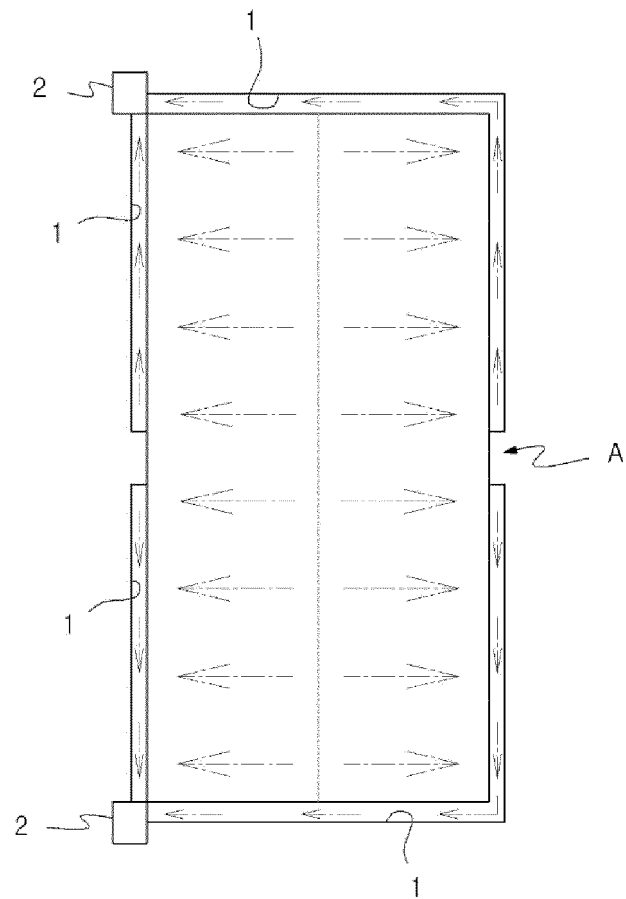


FIG. 6

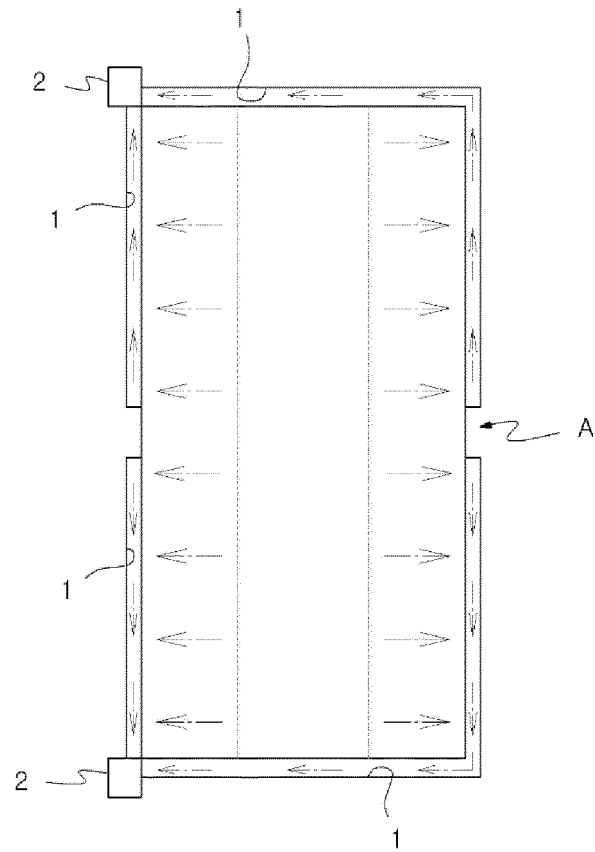


FIG. 7

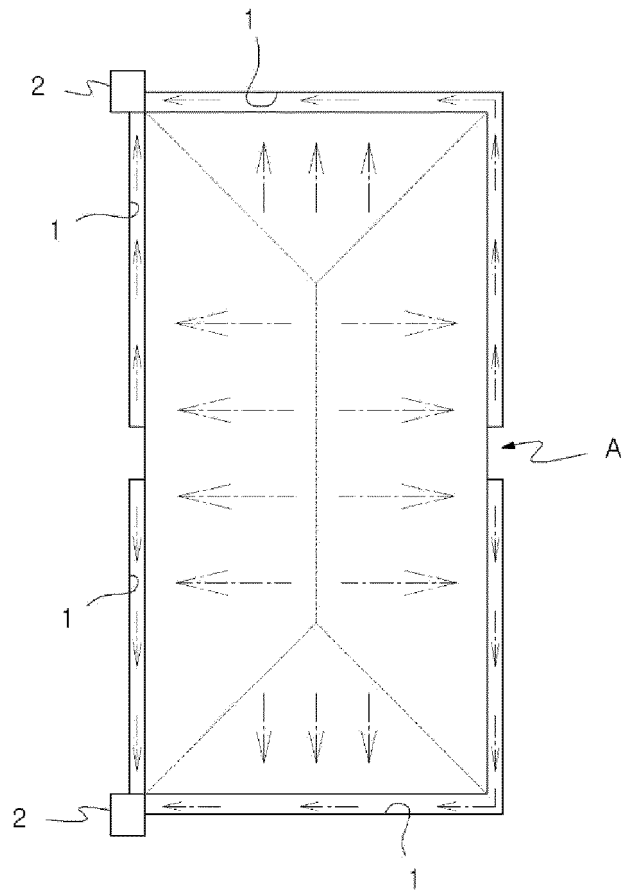


FIG. 8

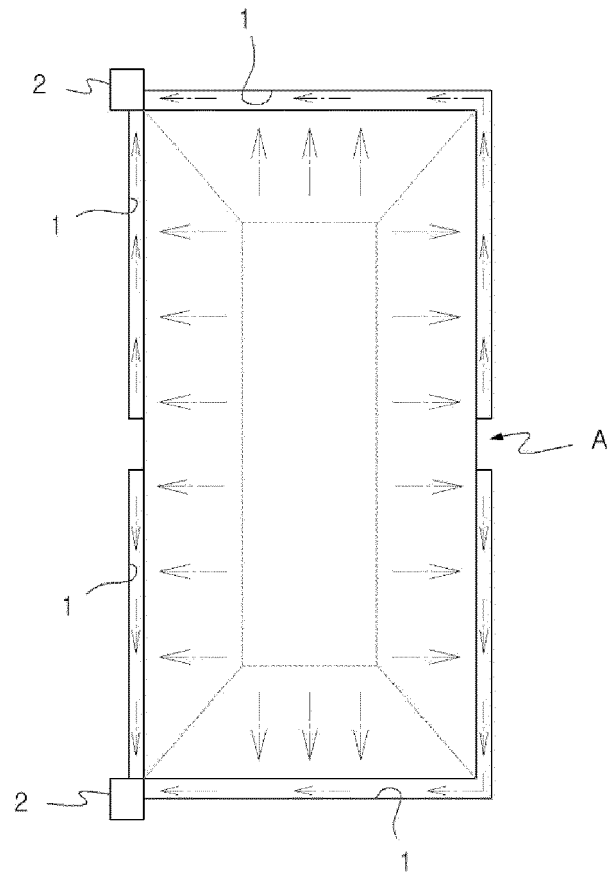


FIG. 9

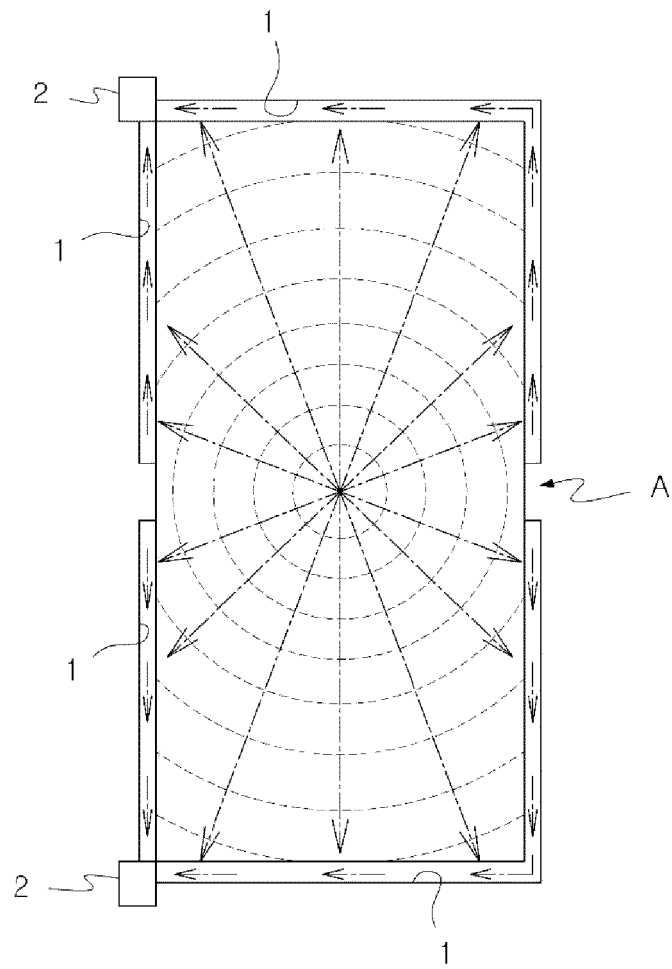


FIG. 10

REFERENCES CITED IN THE DESCRIPTION

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