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(54) ANAMORPHIC ADVERTISING DEVICE FOR SPORTS FIELDS

(57) Anamorphic advertising device comprising a planar substrate on which a deformed advertising logo is printed, characterised in that the substrate is a flexible substrate consisting of a first, felt layer on which said logo is printed, said felt layer being glued to a lower layer of synthetic material, and in that the synthetic material layer is rubber or a material that comprises rubber.

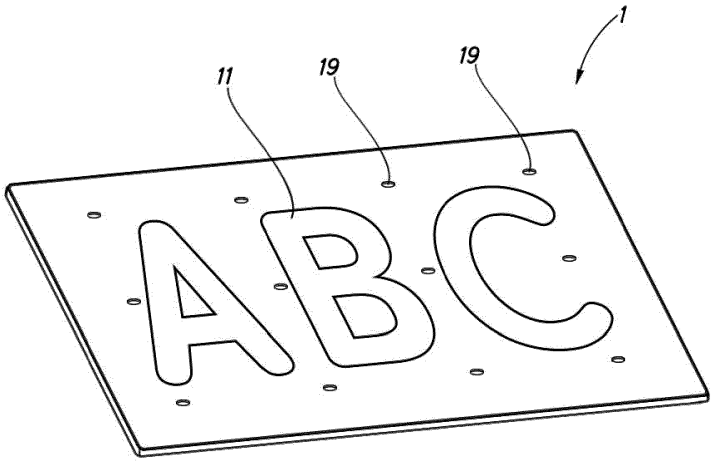

Fig.2

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Description

[0001] The present invention relates to an anamorphic advertising device for sports fields, applicable particularly to outdoor sports fields such as football pitches, although the invention is not necessarily limited to this application.

[0002] Anamorphic advertising devices for sports fields are known. Anamorphism is a technique that deforms an advertising image or motif so that spectators believe they are seeing the advertising motif from a particular viewpoint. Said anamorphic devices are used to give spectators watching an event from a particular viewpoint the impression that they are seeing an advertising device that is raised with respect to the horizontal plane, when in reality they are seeing an anamorphically deformed device positioned horizontally at ground level. This makes it possible to place devices that do not appear horizontal but which do not interfere with the paths of the players. An example of such planar, horizontal devices can be found in the Spanish patent ES2152182.

[0003] Said advertising devices are made from a substrate that has a deformed advertising logo on its upper surface. Normally, the substrate is made of plastics material or cardboard and the advertising logo is painted on the upper surface, applied by means of a self-adhesive vinyl film or glued thereto. It is normal for the shape of said devices to be trapezoidal, though this is not a requirement.

[0004] A drawback of said type of anamorphic device is their behaviour in poor weather conditions. In particular, in the event of rain or very intense sunshine, the device shines, which is undesirable since it alters the advertising image to be broadcast. Moreover, if there is very strong wind, it can lift the device and move it. One solution to this problem would be to make the device heavier, but this then makes it more difficult to install the device on the field and to remove it again.

[0005] An object of the present invention is to disclose an anamorphic advertising device that solves the aforementioned problems.

[0006] More particularly, the present invention discloses an anamorphic advertising device comprising a planar substrate on which a deformed advertising logo is printed, characterised in that the substrate is a flexible substrate consisting of a first, felt layer on which said logo is printed, said felt layer being glued to a lower layer of synthetic material, and in that the synthetic material layer is rubber or a material that comprises rubber.

[0007] The substrate of the device according to the present invention is more resistant to wind since its flexibility helps it fit better to the ground and owing to the anti-slip properties of the rubber. In addition, the felt, which can be printed on, has a certain capacity for absorbing water, which is channelled to lower strata of the layer, and does not produce any glare from the sun or accumulations of water on its surface. Preferably, the weight per unit area of the lower, synthetic material layer is greater than that of the felt layer. When this occurs, the lower layer has a greater weight than the upper layer. This increases the stability of the device on the ground against gusts of wind.

[0008] In a particularly preferred embodiment, the device has through-holes distributed across its surface for water drainage. These holes, which can be small so as to not be noticeable from far away, make it possible to drain away rainwater absorbed by the felt layer. The holes can also be used to pass through joists for holding the device on the field.

[0009] Preferably, on its lower face intended to be in contact with the ground, the lower layer has a repeated embossed design to improve friction with the ground. This makes the device more resistant to the effects of wind while at the same time reducing the total weight of the advertising device, making it easier to install and remove said device.

[0010] Preferred embodiments of the rubber-comprising material of the lower layer may be latex or simply rubber. Rubber is particularly preferred since its properties are the ones being sought.

[0011] As for the felt layer, in order to assist the printing, said layer comprises cellulose fibres (such as paper fibres or fibres combining cellulose with synthetic materials). Also preferably, the felt can be white to begin with, in order to assist the printing process.

[0012] With regard to the thickness of the substrate, it is advantageous if this is as thin as possible, though too low a weight may not be desirable if there are expected to be strong winds. Therefore, it is preferable for the thickness of the substrate to be less than 5 mm. It is also preferable for the thickness to be greater than 2 mm. More preferably, the thickness of the substrate is between 2.5 and 3.5 mm.

[0013] Owing to its flexibility, low thickness and the higher specific weight of its lower layer, the device according to the present invention fits very well to the ground, making it more difficult for players or the referee to trip over it. Furthermore, the material of the upper layer is non-abrasive when skin rubs against it. The device according to the present invention does not require any blunt or sharp fixing element, since it is self-supporting owing to being flat. In addition, its flexibility means that, if necessary, the support wrinkles or folds, cushioning an impact from a player as a result of said player sliding on the ground.

[0014] The present invention also discloses a method for obtaining an anamorphic device according to any one of claims 1 to 10, characterised in that it comprises the steps of:

- calculating the deformation of the logo on the basis of the measurements of the field on which the device will be placed and the location of the television camera from which the image is broadcast, thus obtaining a deformed logo,
- providing a substrate consisting of an upper, felt layer and a lower layer made of rubber or a material

comprising rubber, said two layers being glued together,

- printing the deformed logo on the felt layer of the substrate, preferably using an ink-jet printer.

[0015] Said method utilises the advantageous properties of the material selected for producing the device without the need for special machinery.

[0016] Preferably, the felt of the substrate is white before being printed on.

[0017] Also preferably, the shape of the advertising device is also calculated on the basis of said measurements taken, the substrate being cut in accordance with said measurements, said cutting being carried out before or after the printing process.

[0018] In a particularly preferred embodiment, the method comprises a step of cutting or die-cutting through-holes distributed across the surface of the substrate.

[0019] To aid understanding, explanatory yet non-limiting drawings are included of embodiments of the subject matter of the present invention.

Fig. 1 is a schematic perspective view of a planar anamorphic advertising device located from ground level next to a goal, the advertising device being shown as it would be seen from an oblique perspective (viewpoint from a camera), i.e. raised.

Fig. 2 is a perspective view of the anamorphic device from Fig. 1.

Fig. 3 is a plan view from above showing how the logo is deformed.

Fig. 4 is an elevated view from the side, in which the thickness or size of the substrate has been exaggerated in order to show the parts it comprises.

Fig. 5 is a block diagram illustrating a method for producing the device according to the present invention.

Fig. 6 is a perspective view of a football pitch, showing the arrangement of a device according to the present invention and the reference camera in order to illustrate the dimensions and measurements required to calculate the transformation.

Fig. 7 is a perspective view in which it is possible to see the projection of the image on which the anamorphic deformation effect is based, and on which the calculation of the image deformation can be based.

Fig. 8 is a view from above of an undeformed logo and its subsequent deformation.

[0020] Fig. 1 to 4 show a first embodiment of an anamorphic advertising device according to the present invention.

[0021] The anamorphic advertising device -1- according to the present invention consists of a planar substrate consisting of a lower layer -14-, which is intended to be in contact with the ground of a sports pitch -100- and is made of a material that comprises rubber, such as rubber, and an upper layer -12- made of felt. The two layers are interconnected by means of an adhesive -13- therebetween connecting them.

[0022] Owing to the materials and the thickness used (less than 5 mm, for example 3 mm), the substrate is flexible and can easily fit to the ground.

[0023] On the upper face of the upper layer -12- there is a deformed advertising logo -11-.

[0024] The device in the example is trapezoidal, as can be seen in Fig. 3.

[0025] In the example shown, the device has a series of through-holes -19- that pass through its body, crossing the two layers of the substrate, for rainwater drainage. The holes are distributed across the surface of the device.

[0026] In Fig. 4, it can be seen that the ink from the printing process has penetrated the felt -12-, forming a dyed sub-layer -121- that can be distinguished from the rest of the layer, which retains its original colour (preferably white).

[0027] The lower layer can have an embossed design to reduce its weight, aid flexibility of the device and improve the grip of the device on the ground. The design has not been shown in the drawings.

[0028] Fig. 5 illustrates a possible method for producing the device, as set out below.

[0029] Firstly, the substrate -500- used for producing the advertising device is provided, i.e. the material consisting of two layers, one lower layer and one upper layer glued together as explained above, is provided. Preferably, the felt is white to aid printing on the felt. The material can be in the form of sheets or a roll.

[0030] At the same time, the measurements -501- of the field on which the advertising device will be placed are taken, together with the coordinates of the reference camera from which the image of the anamorphic device shall be recorded (i.e. the point from which the device will not appear deformed). This step is not necessary if these measurements are already available.

[0031] Next, the deformation is calculated -502- from the measurements taken, and is applied to the logo to be displayed.

[0032] After this, the deformed logo is printed -503- on the felt. Owing to the use of the substrate according to the present invention, the printing can preferably be carried out by means of ink-jet printing, using standard plotters.

[0033] Since, in general, the dimensions of the sheet or roll do not match the shape of the advertising device outline, the substrate must be cut -504- accordingly. This can be done before or after printing, depending on what is convenient at the time. If any of the dimensions of the

advertising design exceed the size of the sheet or roll, various parts of the substrate can be interconnected. This can be done, for example, by using adhesive tape on the lower face of the device ("lower layer"). To strengthen the connection, the tape can be pressed after being applied.

[0034] Similarly, the drainage holes are made where appropriate. Preferably, the holes are made once the substrate has been printed on, and are preferably distributed evenly.

[0035] Fig. 6 and 7 are schematic illustrations of the principles of the anamorphic transformation. The figures show how the shape depends on the virtual size intended to be given to the advertising device when seen from the selected viewpoint, which corresponds to the camera -300-. As a result, it is necessary to know the coordinates of the viewpoint and the measurements of the field, and in particular of the region -101- designed for the placement of the advertising device.

[0036] The deformation can be calculated in different, equivalent ways which arrive at the same result. They are all based on, or can be deduced from, the use of the reverse perspective technique and by applying knowledge of geometry and projection. Fig. 7 shows the principle applied to an anamorphic advertising device -1- that is intended to appear to be in a raised position from the viewpoint of the camera -300-. The rectangle ABCD corresponds to the perceived location and size sought for the advertising device. The square A'B'CD corresponds to the actual anamorphic advertising device -1- that produces this result. As can be seen, the actual anamorphic advertising device -1- corresponds to the projection, on the plane of the ground of the sports field -100-, of lines defined by the viewpoint of the camera and the points on the virtual image (rectangle ABCD) sought. As a result of this transformation, the advertising logo to be broadcast, which should not appear deformed in the view from the camera -300-, appears deformed in the anamorphic advertising device -1-. In the figure, a conical perspective projection has been used (only one vanishing point). Other transformations using other types of perspective are also possible.

[0037] Fig. 8 shows an example application of the deformation to the logo. The known processes are focused on calculating parameters such as the height of the deformed logo and the angles a and b. This creates two problems. Firstly, the use of angles causes large errors. Secondly, carrying out said graphic transformation using said parameters makes it difficult to use image-processing software. To solve this problem, the present invention provides for the bi-dimensional coordinates to be obtained, preferably the relative coordinates (x_{22}, y_{22}), ($X_{23'}$, $y_{23'}$) ($X_{24'}$, $y_{24'}$) ($X_{21'}$, $Y_{21'}$) of the corners -22-, -23'-, -24'- and -21'- of the polygon on which the logo is written. Said bi-dimensional coordinates are taken relative to the coordinates (x_{22}, y_{22}), (x_{23}, Y_{23}) (X_{24}, Y_{24}) (X_{21}, Y_{21}) of the corners of the undeformed logo -22-, -23-, -24, -21-. As in the figure, the transformation is simpler if the position of one point of the undeformed logo is matched with the equivalent point of the deformed logo. If these coordinates are calculated from the geometric relationships in Fig. 7, for example, the transformation can be carried out easily by means of commercially available image-processing software, for example, by dragging the corners of the logo from their initial position to their calculated coordinate.

[0038] The production process can also be applied to other substrates different from those in the invention. In particular, the deformation calculation processes disclosed and which are applicable to the deformation logo can be applied autonomously and independently to other anamorphic advertising devices produced using other substrates and other production processes.

[0039] Although the invention has been described in terms of preferred embodiments, these should not be taken as limiting the invention, which will be defined by the broadest interpretation of the following claims.

Claims

1. Anamorphic advertising device comprising a planar substrate on which a deformed advertising logo is printed, **characterised in that** the substrate is a flexible substrate consisting of a first, felt layer on which said logo is printed, said felt layer being glued to a lower layer of synthetic material, and **in that** the synthetic material layer is rubber or a material that comprises rubber.

2. Device according to claim 1, **characterised in that** the weight per unit area of the lower, synthetic material layer is greater than that of the felt layer.

3. Device according to either claim 1 or claim 2, **characterised in that** the device has through-holes distributed across its surface for water drainage.

4. Device according to any one of the preceding claims, **characterised in that**, on its lower face intended to be in contact with the ground, the lower layer has a repeating embossed design to improve friction with the ground.

5. Device according to any one of claims 1 to 4, **characterised in that** the lower layer is made of latex.

6. Device according to any one of claims 1 to 4, **characterised in that** the lower layer is made of rubber.

7. Device according to any one of the preceding claims, **characterised in that** the felt layer comprises cellulose fibres.

8. Device according to any one of the preceding claims, **characterised in that** the total thickness of the sub-

strate is less than 5 mm.

9. Device according to any one of the preceding claims, **characterised in that** the total thickness is greater than 2 mm.

10. Device according to claim 8 and claim 9, **characterised in that** the thickness is between 3 and 4 mm.

11. Method for obtaining an anamorphic device according to any one of claims 1 to 10, **characterised in that** it comprises the steps of:

- calculating the deformation of the logo on the basis of the measurements of the field on which the device will be placed and the location of the television camera from which the image is broadcast, thus obtaining a deformed logo,
- providing a substrate consisting of an upper, felt layer and a lower layer made of rubber or a material comprising rubber, said two layers being glued together,
- printing the deformed logo on the felt layer of the substrate using an ink-jet printer.

12. Method according to claim 11, **characterised in that** the felt of the substrate is white before it is printed on.

13. Method according to claim 12, **characterised in that** the shape of the advertising device is also calculated on the basis of said measurements taken, the substrate being cut in accordance with said measurements, said cutting being carried out before or after the printing process.

14. Method according to any one of claims 11 to 13, **characterised in that** it comprises a step of cutting or die-cutting through-holes distributed across the surface of the substrate.

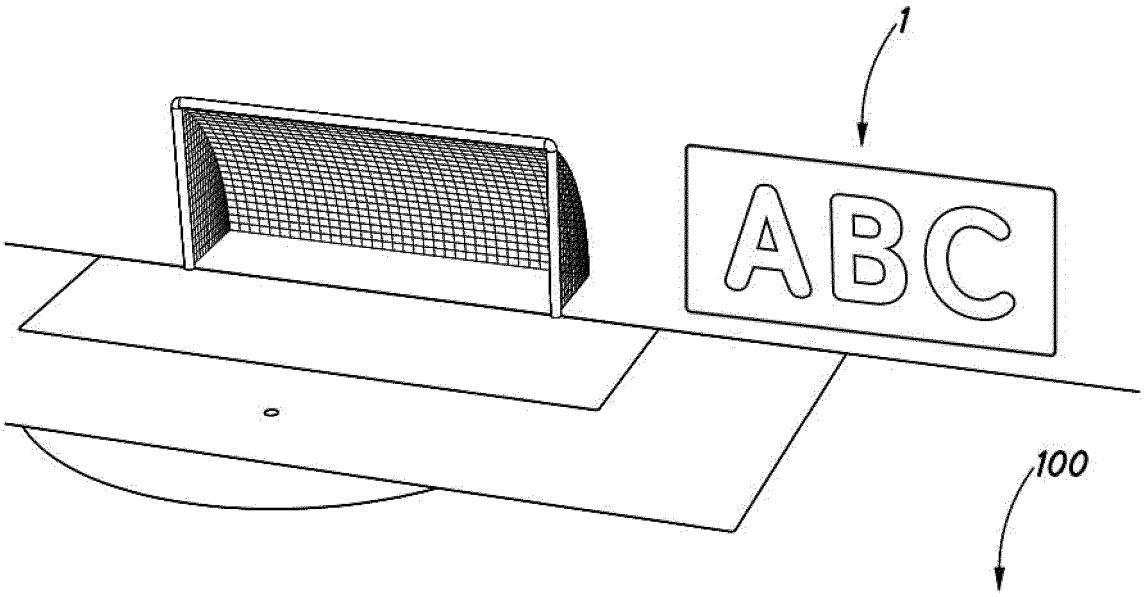

Fig.1

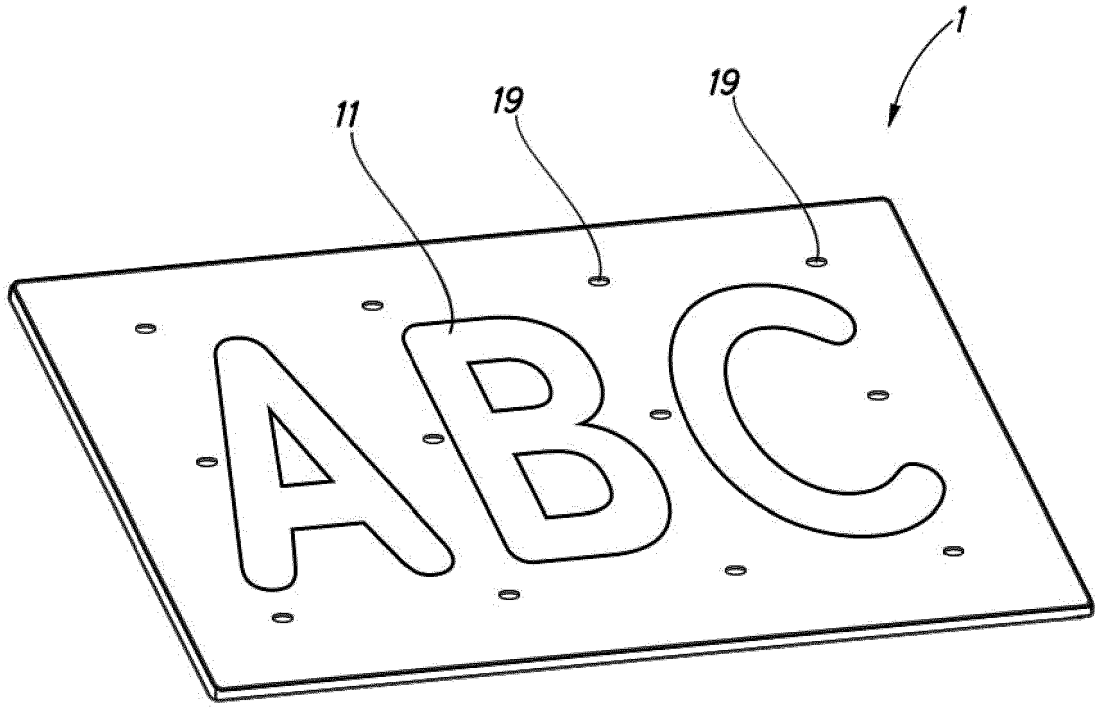

Fig.2

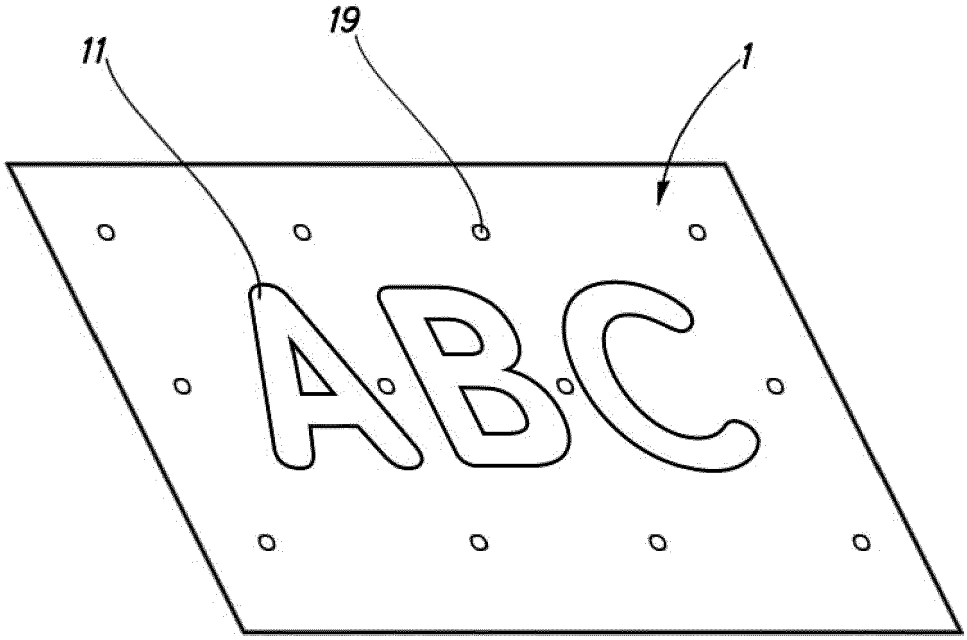

Fig.3

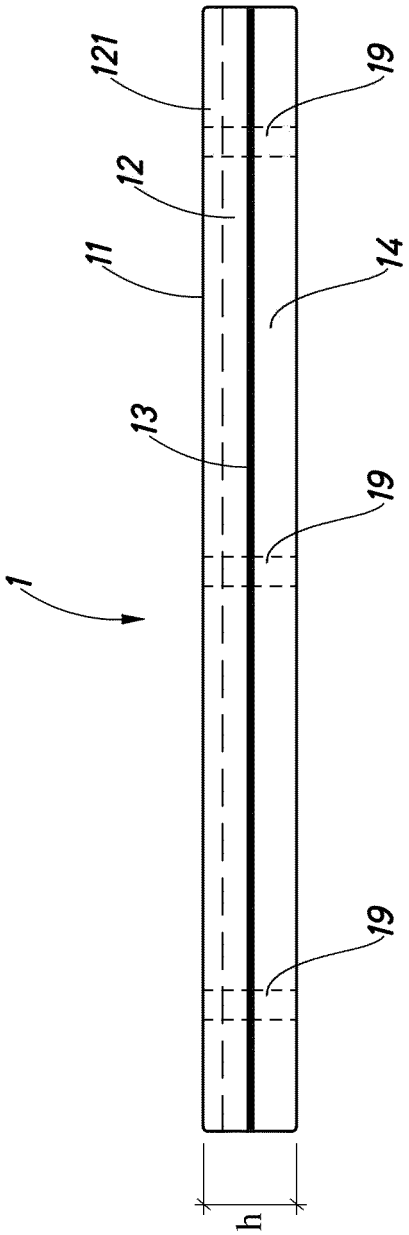

Fig.4

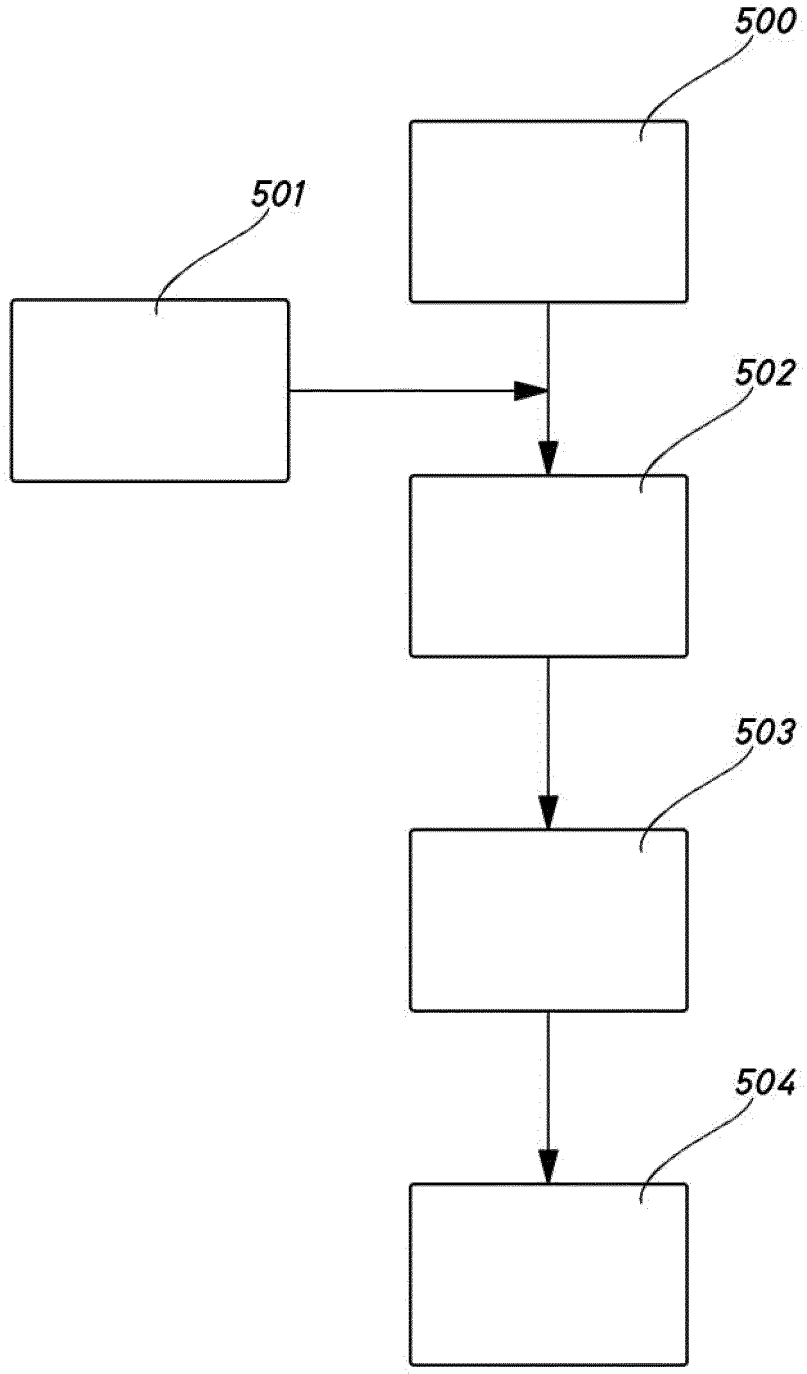

Fig.5

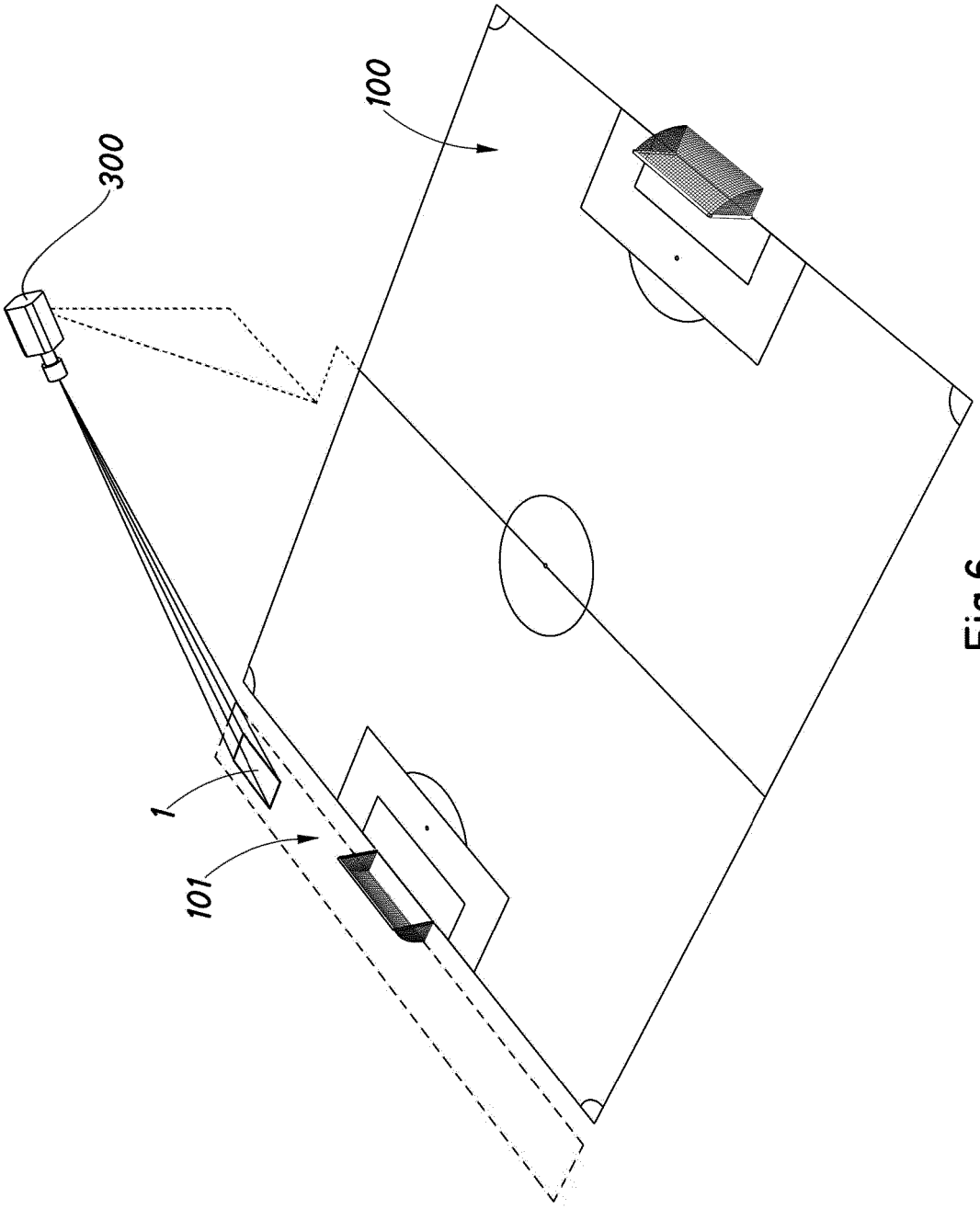

Fig.6

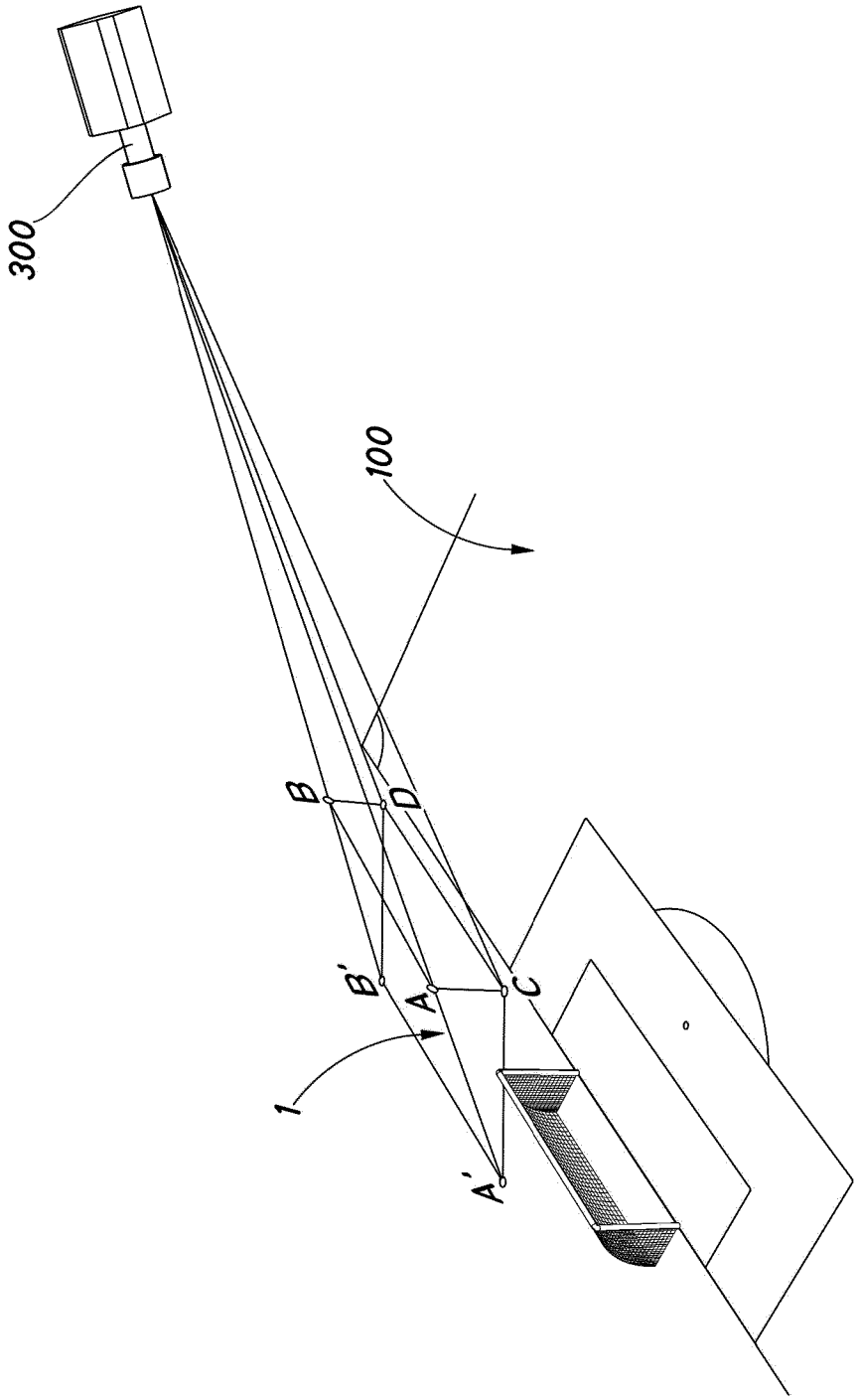

Fig.7

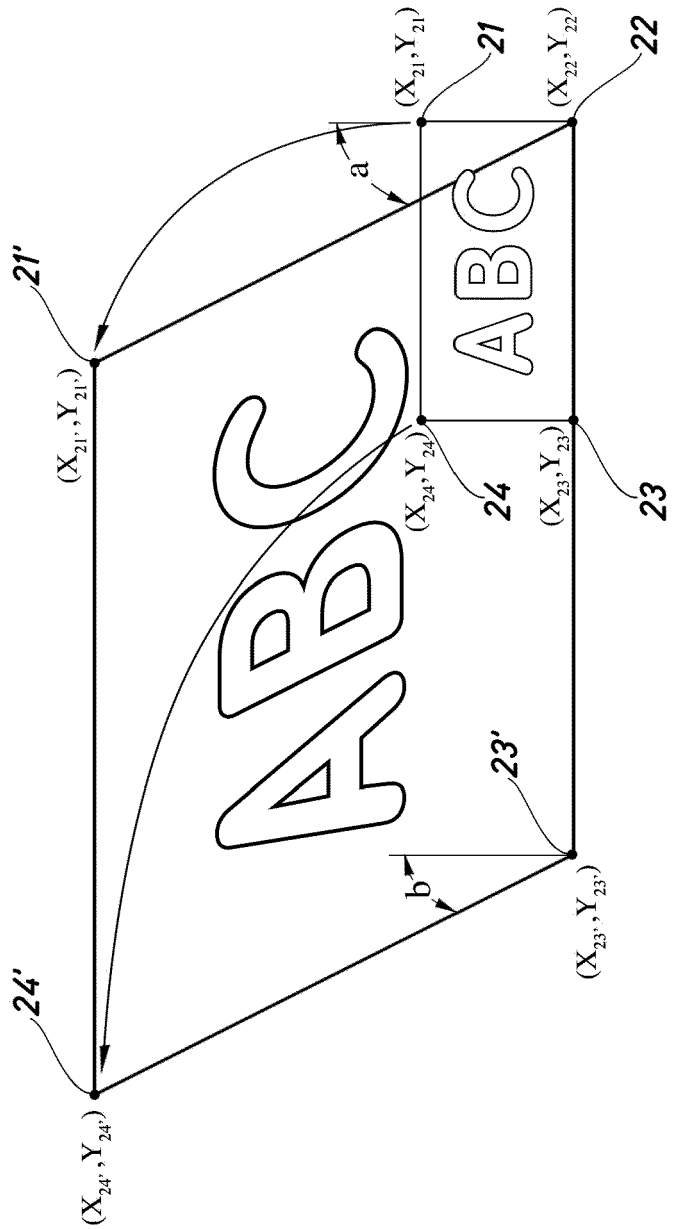
21
22
24
23
21'
24'
23'
a
b
ABC
ABC
(X_{21}, Y_{21})
(X_{22}, Y_{22})
(X_{24}, Y_{24})
(X_{23}, Y_{23})
$(X_{21'}, Y_{21'})$
$(X_{24'}, Y_{24'})$
$(X_{23'}, Y_{23'})$

Fig.8

INFORME DE BÚSQUEDA INTERNACIONAL

Solicitud internacional Nº
PCT/ES2017/070548

A. CLASIFICACIÓN DEL OBJETO DE LA SOLICITUD
G09F19/22 G09F19/12 G09F23/00
De acuerdo con la Clasificación Internacional de Patentes (CIP) o según la clasificación nacional y CIP.

B. SECTORES COMPRENDIDOS POR LA BÚSQUEDA

Documentación mínima buscada (sistema de clasificación seguido de los símbolos de clasificación)
G09F G06T A47G

Otra documentación consultada, además de la documentación mínima, en la medida en que tales documentos formen parte de los sectores comprendidos por la búsqueda

Bases de datos electrónicas consultadas durante la búsqueda internacional (nombre de la base de datos y, si es posible, términos de búsqueda utilizados) EPO-Internal, WPI Data

C. DOCUMENTOS CONSIDERADOS RELEVANTES

Categoría*	Documentos citados, con indicación, si procede, de las partes relevantes	Relevante para las reivindicaciones Nº
Y	WO 03/055377 A1 (MILLIKEN IND LTD [GB]; POLLINGTON DAVID NEIL [GB]; BRAZIER PETER CHARL) 10 de julio de 2003 (10.07.2003)	1,2,5,6, 11,13
A	página 5, línea 27 - línea 31 página 7, línea 9 - línea 16 página 7, línea 25 - página 8, línea 2 página 8, línea 18 - línea 24 figuras 1, 3	3,4, 7-10,12, 14

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A	párrafos [0002], [0003] párrafos [0024] - [0029] figuras	2-4, 7-10,12, 14

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[X] En la continuación del Recuadro C se relacionan otros documentos [X] Los documentos de familias de patentes se indican en el Anexo

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8 de noviembre de 2017 (08.11.2017)	16 de noviembre de 2017 (16.11.2017)
Nombre y dirección postal de la Administración encargada de la búsqueda internacional European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016 Nº de fax	Funcionario autorizado Lechanteux, Alice Nº de teléfono

Formulario PCT/ISA/210 (segunda hoja) (Enero 2015)

INFORME DE BÚSQUEDA INTERNACIONAL

Solicitud internacional Nº
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C (continuación). DOCUMENTOS CONSIDERADOS RELEVANTES

Categoría*	Documentos citados, con indicación, si procede, de las partes relevantes	Relevante para las reivindicaciones Nº
Y	US 7 067 184 B1 (CARKEEK STEPHEN ROBERT [AU]) 27 de junio de 2006 (27.06.2006)	2
A	columna 3, línea 1 - línea 22 columna 3, línea 30 - línea 38	1,3-14
A	EP 3 026 658 A1 (LIVEAD SPACE MARK UP S L [ES]) 1 de junio de 2016 (01.06.2016) párrafos [0013], [0014], [0017] - [0022] figuras	1-14

Formulario PCT/ISA/210 (continuación de la segunda hoja) (Enero 2015)

INFORME DE BÚSQUEDA INTERNACIONAL

Información relativa a miembros de familias de patentes

Solicitud internacional Nº

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- ES 2152182 **[0002]**