Introduction

Notice of opposition filed against EP4474901, granted to Sadida, GmbH & Co KG, and entitled "Electronically detectable ball".

The opponent is iBalls Co., Ltd, Naples, Italy.

The opponent is represented by Mr P. Eleh, Vertreterstr. 22, 81830 Munich, Germany.

The opposition fee has been paid.

The patent is opposed in its entirety (claims 1, 2). The patent is opposed at least on the grounds of Art. 100(a) EPC for lack of novelty and lack of inventive step.

If the Opposition Division intends to reach a decision other than revocation of the patent, then oral proceedings are requested.

Documents relied upon

This submission is based on:

A2: Internet Newsletter from BrainTex AG, published April 2016
A3: 12 Friends - The Modern Football Magazine, published February 2022
A4: Slides (Conference on hybrid cord manufacturing), made publicly available 23 September 2018
A5: US 2018/028635, filed 13 November 2015 and published 26 September 2018
A6: EP 4 347 490 A1, filed 26 April 2018 and published 28 October 2019

A2 is a newsletter published on the internet and accessed on 2 January 2022. For the avoidance of doubt, as A2 is part of the state of the art as an internet disclosure (see GL G-IV,7.5.1).

A3 refers to two disclosures made by way of public prior use. The first is disclosure of the first generation Vuwuseeler ball that was made publicly available in 2010 (see A3 pg 2, ln 13-14), or at the very latest in 2012 (see A3 photo 2 and caption) by its use in South Africa by the international football association. This disclosure is referred to herein is A3a.

The second disclosure of A3 is the second generation Vuwuseeler ball that was made publicly available in 2011, at least by sale (A3 pg 3, ln 29-31) by the Vuwuseeler manufacturer. This disclosure will be referred to as A3b.

A4 are slides made publicly available to attendees of the Conference on hybrid cord manufacturing held from 23-25.09.2018. The slides were published by SACM - Society of Advanced Cord Manufacuturing in Barcelona. These slides were also used in a presentation on "Advanced Hybrid Cords" given by Dr. Lion Messti during the conference. thus although the slides themselves are clearly part of the state of the art as documents made publicly available, the presentation provided at the conference represents a public oral disclosure that is part of the state of the art.

There is no in

Effective dates of the claims

A1 does not claim priority. The subject matter of claims 1 and 2 were present in the application at filing and therefore the effective date for both claims is the filing date of A1, 25 January 2019.

Relevance of the prior art

Documents A2, A4 and A5 were all published (or otherwise made publicly available) before the effective filing date of the claims. These documents as therefore full prior art under Art.54(2) EPC for claims 1 and 2.

A3 itself was published after the effective date, so is not prior art for claims 1 and 2. However, the prior use disclosures A3a and A3b mentioned in A3 were made before the effective date of claims 1 and 2 and are therefore also full prior art under Art.54(2) EPC for claims 1 and 2.

A6 was filed before the effective date of claims 1 and 2, but was published after. As A6 is an EP application it is novelty only prior art under Art.54(3) EPC.

Claim 1

Lack of novelty over A5 (Art.52(1) EPC / Art. 100(a) EPC)

Claim 1 lacks novelty over document A5.

A5 discloses the following features of claim 1:

A *hybrid yarn for use under high mechanical stress conditions, such as for a ball for a ball game,* - A5 discloses a polyester-stainless steel cord 5 in claim 1 (and also in at A5[0001], [0010]) which is a hybrid yarn according to A2 pg 1, ln 16. Note that the term "cord" has the same meaning as "yarn" (see A5[0003]). The term "for" only requires "suitable for". The yarn of A5 is suitable for high mechanical stress conditions because it is used in bicycle tyres (A5[0001]) that undergo high mechanical stress (A5[0002], [0006]). The language of the claim does not explicitly require that the yarns are used in a ball for a ball game (this is merely presented as an example use).

wherein the yarn comprises an inner strand of chemically-resistant organic fibres - A5 discloses a core 7 of polyester fibres (A5[0009] and claim 1). The term "core" is used interchangeably with "inner" in A1 (see [0015]). Polyester fibres are chemically-resistant organic fibres as per A1[0013] ("e.g. polyester"). For avoidance of doubt, the polyester fibres of A5 are organic fibres (last sentence A5[0003])

and a circumferential outer layer consisting of 10-20 thin electrically conductive metal wires, - Claim 1 of A5 defines a range of 15-30 stainless steel wires. As the lower end of this range falls within the range defined in claim 1 of A1, this feature is present (see GL G-VI, 8 - "novelty is destroyed by an explicitly mentioned end-point of the known range"). The wires defined in claim 1 are "thin" because they are less than 25µm which is considered thin within the technical field as it is less than 100µm (see A6[0006]). Stainless steel is electrically conductive as per A1 [0014] - "We also tested other electrically-conducting and chemically-stable materials such as
stainless steel,"

the thin electrically conductive metal wires being twisted around the inner strand along the longitudinal axis of the yarn, - Claim 1 of A5 describes the stainless steel wires as wound around the core along its longitudinal axis, which implicitly requires a twist (see also para [0013] A1).

whereby a void is formed between the inner strand and the outer layer by removal of material using a solvent - A5 discloses a void 8 in claim 1 between the core and outer layer (see also para [0009]). A5 does not disclose a solvent (instead it discloses thermal treatment). However, the second part of this claim language is a method step and so is not limiting on the claim which is directed to a product. A product claim that includes process steps must be interpreted in an absolute sense, i.e. independently of the process (see T 219/83). Hence, the process step of claim 1 is not limiting on the product.

Thus, A5 discloses all of the features of claim 1, which is therefore invalid for lack of novelty.

Claim 2

Lack of inventive step in view of A5 and A4 (Art.56 EPC / Art. 100(a) EPC)

The problem solution approach is applied below.

A5 is the closest prior art because it is concerned with the same purpose as claim 2, namely the production of a fibre that can be used under high mechanical stress coniditions (see e.g. [0006] of A5). Likewise, as is provided above, A5 discloses all of the features of the yarn of claim 1, which the method of claim 2 aims to produce. As is discuss below A5 also discloses several of the steps claimed in claim 2.

A2 is not the closest prior art because it only provides very limited disclosure of a composite yarn and no disclosure of any void, which is a significant aspect of claim 2.

A3a is not the closest prior art because it is concerned with copper, rather than hybrid, yarns.

A3b is not the closest prior art because it is not concerned with yarns at all.

A4 is not the closest prior art because it is not concerned with providing yarns for high mechanical stress conditions.

A5 discloses the following features of claim 2:

Method for producing the hybrid yarn according to claim 1 - As discussed above, A5 discloses all of the features of claim 1. In para [0010] A5 discloses a method of producing such a yarn. As above, it is noted that the yarn of A5 is a hybrid yarn as per A2 pg 1, ln 16.

a. providing an intermediate layer of polyamide fibres around the inner strand of chemically-resistant organic fibres, - A5[0010] discloses winding polyamide fibres around a polyester fibre core (note again, "core" is the same as "inner strand as per A1[0015]. Polyester is a chemically-resistant organic fibre as per A1[0013] ("e.g. polyester").

b. twisting the thin electrically conductive metal wires around the intermediate layer of polyamide fibres, - Para [0010] discloses that the stainless steel wires are "added". It is clear, however, that this "adding" step is wrapping of the stainless steel wires (see A5[0009]). See also claim 1, which uses the term "wound" which implicitly requires twisting as per para [0013] A1.

A5 discloses forming a void, but does not disclose forming the void in the manner of step c as follows:

c. chemically removing the polyamide fibres (3) by a treatment with a solvent consisting of 40-60 wt% of trifluoroacetic acid in acetone to provide a void between the inner strand and the thin metal wires.

The technical effect of this distinguishing feature is that it provides a method of dissolving an intermediate layer that is precise at controlling the dimension of the void (A1[0015]). An irregular void can cause unpredictable behaviour which can result in rupture of the yarn. The objective technical problem is therefore how to form a void that is constant along its length.

The skilled person would be motivated to modify the method of A5 because A5 teaches that method used therein results in a void that is not constant for the length of the cord (last sentence A5[0010]). This is said to be caused by non-complete removal of polyamide material in the process. The skilled person would thus seek a better method to provide a more consistent void, leading to improved mechanical properties.

The skilled person would look to A4 because it is concerned with "hybrid cord" manufacturing - the use of the term "cord" suggesting that the presentation was concerned with tire technology (A5[0003]).

A4 discloses the features of step c as follows:

c. chemically removing the polyamide fibres by a treatment with a solvent - Step 4 of slide 2 is disclosed as involving removal of "chemically soluble fibres". Footnote 1 provides that polyamide fibres are the best material for such chemically soluble fibres. Footnote 1 also explains that the polyamide fibres

are removed by being dissolved by a solvent.

consisting of 40-60 wt% of trifluoroacetic acid in acetone to provide a void between the inner strand and the thin metal wires. - Slide 2 , step 4 provides that the removal of the chemically soluble fibres results in a void. The tip on slide 3 explicitly suggests trifluoroacetic acid as it leaves no residue. This same teaching is provided in the text at the bottom of slide 3. Hence, the skilled person is clearly told by A4 to use such an acid. The text at the bottom of slide 3 further provides that all solvents were tested at a concentration of 50 wt% in acetone. In the absence of any other taught wt%, the skilled person would undoubtedly elect to use this disclosed wt%. As this example falls within the claimed range, this feature is clearly taught by A4.

Hence, A4 provides all features missing in A5.

The skilled person would modify the method of A5 to instead implement the above steps for the following reasons. Firstly, A4 tells the reader (at the bottom of slide 3) that the method used therein "left no residue of the polyamide fibres at all". Hence, the skilled person is told by A4 that the method disclosed therein provides a direct solution to the problem discussed in A5 (which is in turned aligned with the objective technical problem identified above).

Secondly, both A5 and A4 make use of polyamide fibres, so there would be no need to make any change to the materials used in A5 (i.e. it is clear that they are compatible). Similarly, the process of A4 follows very similar steps to A5 (except for step c, and except for the types of fibres used). Hence, there is minimal adaptation that would need to be made by the skilled person to alter the method of A5.

the skilled person would thus arrive at the claimed invention without exercise of any inventive step. Hence, for the reasons given above, claim 2 lacks an inventive step in view of the combination of A5 and A4.

Statement of facts and arguments by opponent (continued)

Introduction

The patent is opposed in its entirety (claims 1-6).

In addition to those grounds mentioned in part 1 (novelty and inventive step), the patent is opposed on added subject matter under Art100(c) EPC.

Effective dates of claims of A1

Claims 5 and 6 were present in the application as filed (previously claims 4 and 5). The effective filnig date for each of these claims is therefore the filing date of A1, 25 January 2019.

The subject matter of claim 4 was also present in the application as filed (previously claim 3). The effective filing date for this claim is therefore also 25 January 2019.

As we discuss further below, claim 3 does not have an effective filing date.

Claim 3

Added subject matter (Art. 100(c) EPC)

The subject matter of claim 3 was only present in the application as filed in combination with the subject matter of new claim 4.

The only disclosure of a ball including a bladder, external cover (of a plurality of segments) and a passive antenna (that is a structural component) is in paragraphs [0018] and [0019] of A1, in reference to Figure 2. The only means disclosed in these passages (and, indeed A1 as a whole) for providing a passive antenna that is a structural component is a hybrid yarn consisting of organic fibres and thin electrically conducting metal wires (see penultimate sentence of A1[0018]).

Accordingly, the removal of these features (now present in claim 4) from claim 3 is an intermediate generalisation that results in present claim 3 containing added matter.

Claim 4

Lack of novelty over A6 (Art.54(3) EPC / Art.100(a) EPC)

Claim 4 is not novel over A6.

A6 discloses the following features of claim 3 (upon which claim 4 is dependent):

An electronically detectable ball - A6[0011] discloses a traditional football including stainless steel wires 1. A football is a ball (A1[0001]). The yarn that is used includes 90 stainless steel wires of 25 µm diameter (A6[0012]). As provides that a yarn comprising at least 40 thin stainless steel wires of 25 µm diameter is needed to have a ball that produces detectable signals (A1[0014]). The ball disclosed in A6 meets this criteria so would be electronically detectable.

comprising a rubber bladder (6) - It is clear from A3, pg 2, ln 1-7 that there are two types of football: newer constructions that are bladderless with a seamless synthetic casing, and "classical" constructions that include a bladder and leather panels. It is also apparent from A1, [0018] that all balls formed from panels are provided with a rubber bladder (to ensure air tightness). It is thus implict in the disclosure of a "traditional football" having "panels" (A6[0011]) that the ball of A6 includes a rubber bladder.

and an external covering enclosing said bladder (6), the covering comprising a plurality of segments (7) - Para [0011] of A6 provides that the football includes panels. The same passage provides that the panels are stitched together with yarn and that the yarn thus forms a structural component of the ball's outer covering. A6 thus discloses a ball having panels, and it is implicit that those balls enclose a bladder.

and a passive antenna, - As provided above, the ball of A6 includes a yarn having stainless steel wires 2 which meet the requirements to be detectable and thus form a passive antenna (see A1[0014] which discusses materials suitable for use as antenna).

characterized in that the passive antenna is a structural component of the external covering to allow electronic detection of the ball (9). - A6 [0011] provides that the yarn (i.e. the antenna as identified above) is a "long-life structural component of the ball's outer covering". As already discussed above, the stainless steel in the yarn provides for protection. Hence, this feature is present.

A6 also discloses the following features of claim 4:

The electronically detectable ball (9) according to claim 3, - as set forth above.

a yarn (1) fastening the segments (7) of the external covering to each other, - A6[0011] provides that a composite yarn 1 is used to stitch panels of a ball together. As already provided above, the panels form an external covering of the ball.

the yarn (1) being a hybrid yarn consisting of organic fibres (2) - A6[0012] provides that the stainless steel wires 2 are provided with two outer layers of an organic fibres. It is noted that the term "consisted" is typically construed as being exclusive. Nevertheless, because the yarn 1 of A6 is disclosed as

being formed only of organic fibres (it does not matter that they are provided in two layers) and thin metal wires (as discussed below), this feature is present.

and thin metal wires (4) forming the passive antenna. - The stainless steel wires 2 of A6 are thin, because they have a diameter of 25 µm, which is less than 100 µm (see A6[0012] and A6[0006]). Stainless steel is a metal, as is apparent form A6[0006] which discusses the term "metal wire" and "thin metal wire", and from A1[0014] discussing the conductivity of metals, including stainless steel. As has already been discussed above, the stainless steel disclosed in A6[0012] is such that it would form a passive antenna.

Accordingly all features of claim 4 are disclosed by A6. Claim 4 is thus invalid for lack of novelty over A6.

Lack of inventive step in view of A3a and A2 (Art.56 EPC / Art.100(a) EPC)

Notwithstanding the lack of novelty discussed above, claim 4 is not inventive in view of a combination of A3 and A2. The problems solution approach is applied below.

A3a (prior use of first generation ball) is the closest prior art because it is in the same field (footballs) and because it is concerned with the same purpose as claim 4, providing a football that is electronically detectable.

A2 is not the closest prior art because it is predominantly concerned with providing a new fabric. A4 is not the closest prior art because it is concerned with a method of making yarns (and makes no mention of footballs). A5 is not the closest prior art because it is conerned with bike tyres rather than footballs. A6, of course, is not available for an inventive step attack.

A3 discloses the following features of claim 3:

An electronically detectable ball (9) comprising a rubber bladder (6) - The first generation Vuwuseeler ball (referred to herein as Vball) was a classical hand sewn ball with a rubber bladder (A3 pg2, ln20-21). The Vball was detectable as is evident from A3, pg2, ln28-29.

external covering enclosing said bladder (6), - The Vball had an external covering (outer casing disclosed at A3, pg 2, ln 23) and it is implicit that this enclosed the bladder.

the covering comprising a plurality of segments (7), - The outer casing of the Vball was formed of segements (A3, pg 2, ln 23).

and a passive antenna characterized in that the passive antenna is a structural component of the external covering to allow electronic detection of the ball (9). - The Vball included copper yarn (A3, pg2, ln22) which was used to sew segements of the ball's outer casing "thereby creating a structure consisting of the segments and the yarn" (A3, pg2, ln 23-24). The copper yarn acted as a passive antenna (A2, pg2, ln 22).

A3 does not disclose the further features defined in claim 4. In particular:

the yarn (1) being a hybrid yarn consisting of organic fibres (2) and thin metal wires (4) forming the passive antenna.

The technical effect of this feature is that the high tensile strength and elasticity of the yarn further facilitates stability and ensures a long lifetime of the seams even under high mechanical stress conditions (see A1[0019]).

The objective technical problem is thus the provision of a ball that provides reliable goal detection throughout a long lifetime.

As provided in A3, pg3 ln3-8, the Vball was recalled only a few months after release (i.e. at some point in 2010 or 2011). The skilled person would thus have been aware of the problems with the Vball - specifically that the metal yarn was susceptible to breakage under high mechanical stress. The skilled person would therefore have been motivated to modify the Vball to address this issue.

The skilled person would have looked to A2 because it makes reference to hybrid yarns that can be used as passive antennae and because it also makes reference to sports devices (A2, pg 1, ln 23).

A2 discloses a hybrid yarn (A2, pg1, ln 16 "hybrid (composite) yarn") that consists of organic fibres (A2, pg1, ln 16 "organic polyester fibres") and thin metal wires (A2, pg1, ln 13 "metal wires of about 30µm", which are considered thin because they are less than 100 µm (see A6[0006]).

Thus A2 discloses the distinguishing features identified above.

The skilled person would modify the ball of A3a to incorporate the hybrid yarn of A2 because A2 teaches that such yarn can improve the durability of devices (A2, pg 1, ln 27-28) - the reference to device being specific to sports devices (see A2, pg 1, ln 23-24). In other words, A2 present the solution to exactly the same problem faced by the skilled person in exactly the same field.

Likewise, A2 discloses the same technical effects as provided by the invention defined in claim 4, namely the high tensile strength and controlled

elasticity (see A2, pg1, ln 26). The same passage of A2 notes that the fibres of A2 are lightweight, and so the skilled person would not view weight as a technical barrier to implementing the fibre of A2.

Further, A2 makes it clear, for example from A2, pg 2, ln 11-15 that fibres of the disclosed material can be used to detect objects. In combination with the aforementoined disclosure of sports devices, the skilled person would thus be aware that such fibres are suited to the intended application of the football.

In the same passage, A2 explains that the yarn can be used to sew different parts of material together, such material including leather. As the VBall of A3a includes leather panels, the skilled person is thus told such fibre is technically suitable for use with the material of the Vball.

Finally, for the avoidance of doubt, A5 teaches the use of polyester fibres (see A5[0010]) with caoutchouc. Thus, the skilled person knows from this disclosure that there is no technical problem using polyester fibres (i.e. which are also used in the hybrid yarn of A2) with the caoutchouc bladder of the VBall of A3a.

For these reasons, the skilled person would arrive at the claimd invention without excercising an inventive step. Thus, clam 4 is invalid for lack of inventive step.

Claim 5

Lack of inventive step in view of A3a, A2 and A3b (Art.56 EPC / Art.100(a) EPC)

The closest prior art is A3a for the same reasons provided above with respect to claim 4.

As set forth above, all features of claim 3 are disclosed in A3a. A3a also discloses the following features defined in claim 5:

further comprising at least three ultrahigh-frequency electromagnetic wave sending and receiving units (14) configured to detect that the ball (1) is crossing a predefined area (13) - As per A3, pg 2, ln 25-29 the system provided with the VBall of A3a included ultrahigh-frequency transceivers for electronic goal detection. According to A2, pg 2, ln5-7 a "transceiver" is is an ultrahigh-frequency electromagnetic wave sending and receiving unit as defined in claim 5. Further, it is implicit in the term "goal" that the arrangement of A3a detects a ball crossing a predefined area (see A1[0020] which notes that a goal spans a predefined area). For the avoidance of doubt, it is also noted that the VBall system (i.e. the "smart goal" system) must have included three such transceivers because according to A3, pg 2, ln 28 it was "technically identical" to the "smart referee" system, which itself had three transceivers (A3, pg 2, ln 24).

The features not disclosed in A3a are those defined in claims 4 and the following feature of claim 5;

the units being releasably attachable to a support structure limiting the predefined area (13)

The technical effect of the distinguishing features defined in claim 4 are already set forth above as being that the high tensile strength and elasticity of the yarn further facilitates stability and ensures a long lifetime of the seams even under high mechanical stress conditions

The technical effect of the distinguishing feature of claim 5, on the other hand, is that the system can be attached and removed from e.g. the posts and crossbar of a goal so as to be portable.

The technical effects of the first and second distinguishing features are thus unrelated. Accordingly, there is no technical effect achieved by the two distinguishing features taken in combination, but rather a plurality of partial problems which are independently solved. Consequently, the inventive activity related to the two different posed partial problems can be seperately assessed (GL G-VII, 5.2 or 6).

The objective technical problem associated with the features of claim 4 has already been set forth above. It has also already been asserted that in view of this objective technical problem, these features do not provide an inventive step over the combination of A3a and A2.

The objective technical problem associated with the second distinguishing feature is the provision of a goal detection system that is portable.

The skilled person would look to A3b (i.e. the second generation VBall and associated "smart referee" system) in solving this problem at least because of the phenomenal success of the second generation ball and "smart referee" system. Likewise, becauese there was no other technical difference between the systems that would have otherwise prevented the skilled person from modifying the system of A3a, the skilled person would not have been dissuaded from modifying the transceivers of A3a in view of A3b.

Accordingly, the skilled peron would readily adapt the smart referee system of A3a to provide seperate units (i.e. seperate from the goal posts and cross bar) that include the straps of A3b so as to arrive at the invention defined in claim 5.

For this reason, none of the distinguishing featuires of claim 5 provide an inventive step over the prior art, and thus claim 5 is invalid for lack of inventive step.

Claim 6

Lack of inventive step in view of A3a, A2 and A3b (Art.56 EPC / Art.100(a) EPC)

As is already set forth above, the combination of A3a, A2 and A3b renders the features of claim 5 (on which claim 6 depends) invalid for lack of inventive step.

Claim 6 adds the additional feature of a *computer implemented method for adapting the odds in live sports betting when a goal is detected* (i.e. by the arrangement of claim 5).

Such a claim includes both technical and non-technical features and it is thus appropriate to use the COMVIK approach.

The only features of this claim that contribute to the technical character of the invention are that it is a *computer implemented* method and those features defined in claim 5 (to which this claim refers).

That is, "*adapting the odds in live sports betting when a goal is detected*" is quite clearly a non-technical feature because it is concerned with a business method. That this is the case is, for example, evident from A3, pg5, ln 11-12 where betting is noted as being a commercial issue.

Again, there are two seperate sets of distinguishing features that can be addressed as partial problems. The first distinguishing features are those forming part of claim 1, which we have already addressed above and have asserted are non-inventive.

The second distinguishing feature is the computer implementation of the steps of the business method (i.e. the betting method). The technical effect of this difference is merely the automation of the business method underlying claim 1.

The partial problem is thus how to provide the claimed betting method in an automated manner. Given the skilled person is considered to be a software project team and is given the knowledge of the betting method in the form of a requirement specification, such a problem would quite clearly be solved by the skilled person in an uninventive manner.

For this reason, claim 6 is invalid for lack of inventive step.

Kind regards,

Mr P. Eleh