



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
16.07.2008 Bulletin 2008/29

(51) Int Cl.:
A63B 71/06 (2006.01) **A63B 43/00** (2006.01)

(21) Application number: **07000396.7**

(22) Date of filing: **10.01.2007**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

(72) Inventors:
• **Borst, Petrus Mathias**
1713 BA Obdam (NL)
• **van Taunay, Gerald Jules Rudolf**
1622 CE Hoorn (NL)

(71) Applicant: **INVIT B.V.**
1713 BA Obdam (NL)

(74) Representative: **De Jong, Robbert Arij Jeroen**
Exter Polak & Charlouis B.V.
P.O. Box 3241
2280 GE Rijswijk (NL)

(54) **Method and system for detecting an offside situation**

(57) For detecting an offside situation during a soccer game, a referee (in particular a linesman) needs to determine whether an offensive player is behind a line, which line is determined by the last defensive player of the other team and thus moving, at the moment that the ball is kicked.

In order for the referee to keep said offensive player in sight, a method and system is provided, wherein an observable signal is generated when the ball is kicked or otherwise touched by a player. Thus, it is prevented that a small time lag occurs between detection of the kick of the ball and detection of the position of the offensive player with respect to the position of the last defensive player.

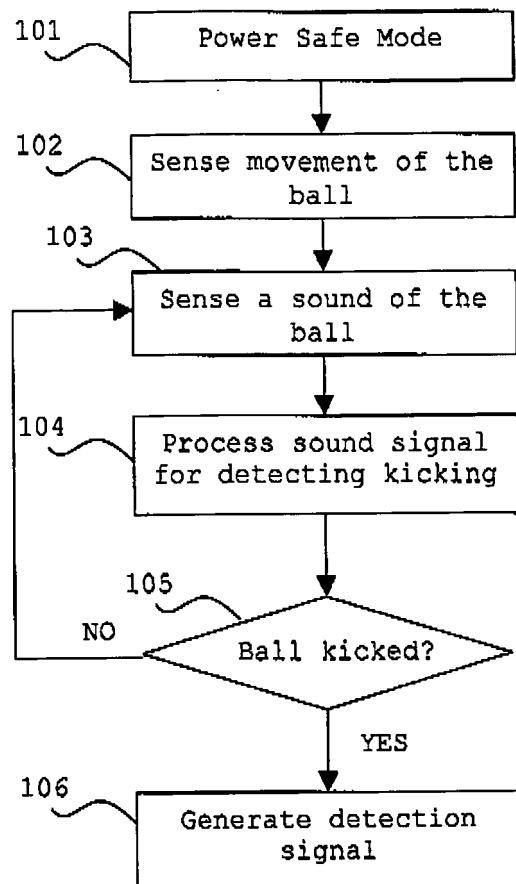


FIG. 1A

Description

[0001] The present invention relates to a method and a system for detecting an offside situation during a game of football (soccer).

[0002] In football usually at least two referee's (a referee and a linesman) are to referee the play. An important rule to be observed and refereed is offside. Offside may occur if a first player, usually an offensive player, of a first team is located between the goalkeeper and all the other players of the second team. If another player of the first team passes the ball to the first player at the moment that the first player is between the goalkeeper and the other players, the first player is deemed to be offside. The linesman is to detect such a situation and to raise the flag to indicate to the referee that the first player is offside.

[0003] In order to determine whether the first player is offside, the linesman needs to determine a position of the first player of the first team with respect to a position of the players of the second team exactly at the moment when another player of the first team kicks the ball towards the first player.

[0004] However, usually, the ball is not near the first player and therefore, the linesman cannot see the first player and the ball at a single glance. Therefore, the linesman commonly keeps the ball in sight and as soon as the ball is kicked, he changes his sight towards the first player. Although the change of sight occurs in a very short period, e.g. several milliseconds, the position of the first player and/or a number of the players of the second team may have changed considerably. Further, other players may obstruct the sight of the kick of the ball. Also, depending on the position of the referee with respect to the first player of the first team and some of the players of the second team, it may be that the linesman misjudges the relative position of the players. As a consequence of the aforementioned reasons and possibly other reasons, the linesman often misjudges and, when in doubt, calls for offside, although the first player was actually not offside.

[0005] It is an object of the present invention to provide a method and system for assisting the referee and linesman in correctly judging offside.

[0006] The object is achieved in a method for detecting an offside situation during a soccer game. The method comprises generating a detection signal when a ball is kicked by a first player and supplying the detection signal to a signaling system. The signaling system generates an observable signal to be observed by a referee, in response to receipt of the detection signal.

[0007] The above method allows the referee to detect a position of a second player at the moment of observation of the observable signal. As used herein, a referee may be the actual referee or may be a linesman or may be any other person observing the game.

[0008] As a detection signal is generated and converted to an observable signal, the referee may keep prima-

rily a possibly offside player in sight, instead of the ball. There is no need for the referee to observe the (kick of the) ball. As used herein, the term 'kick of the ball' is intended to refer to any kind of contact with the ball by a player that may or will lead to offside. At the moment that a player kicks the ball, the observable signal is generated. When perceiving the observable signal, the referee keeping the possibly offside player in sight can immediately determine whether the player is at that moment, i.e. the moment of the kick of the ball, actually offside.

[0009] In an embodiment a further referee may observe the ball and, using a suitable system, the further referee may activate a detection signal generator, e.g. by pushing a button, for generating the detection signal.

[0010] In an advantageous embodiment of the method, the method further comprises sensing a sound signal produced by the ball; processing the sound signal in order to determine whether the ball is kicked; and if it is determined that the ball is kicked, generating the detection signal. When a player kicks the ball, a sound vibration is generated in the ball. The sound vibration may be sensed. However, also other events may generate a sound vibration in the ball. Therefore, any sensed sound signal is processed, e.g. a comparison with a predetermined sound signal of a kick of the ball or spectral analysis. Then, if it is determined that a sensed sound is the sound of a kick of the ball, the detection signal is generated. Thus, the moment of determination of kicking the ball is not dependent on the subjective observation of a person, but is objectively determined by electronic means.

[0011] In an embodiment of the method generating a detection signal comprises compiling the detection signal, a content of the detection signal comprising at least one element of the group comprising detected sound information data and a ball identification code. Thus, the detection signal may be compiled from a number of kinds of information. For example, if a number of balls may be used, each ball may comprise its own identification number in order to prevent that a false or erroneous observable signal is generated as a consequence of a detection signal generated in another ball. The detected sound information may be used to control a level of the observable signal thereby providing information to the referee how hard the ball was kicked. If only a soft kick was given, the referee may determine that the ball was not intended to be kicked towards the possibly offside player presuming that the distance between the ball and the offside player is large.

[0012] In an embodiment of the method the detection signal is generated in the ball. In this embodiment, the method comprises wirelessly transmitting the detection signal from the ball to the signaling system.

[0013] In an embodiment of the method the observable signal comprises a signal selected from the group comprising an audible signal, a visual signal, and a tangible signal. A sound signal may be provided to the referee. Likewise, a light signal may be provided. Further, like-

wise, a tangible signal may be provided to the referee. In an embodiment two or more of these signals are provided to the referee.

[0014] In an embodiment, wherein the observable signal comprises a tangible signal, the step of generating an observable signal comprises generating a vibration in an object to be held by the referee, the object in particular being a flag handle. Also other signal generators may be arranged in the flag handle, such as an audible signal generator and/or a visible signal generator.

[0015] The present invention further provides a system for performing the method. The system for detecting an offside situation during a soccer game comprises a detection signal generator for generating a detection signal when a ball is kicked by a player; a detection signal transmission system for supplying the detection signal from the detection signal generator to a signaling system; and an observable signal generator comprised in the signaling system for generating, in response to receipt of the detection signal, an observable signal to be observed by a referee.

[0016] In an embodiment, the detection signal generator is arranged in the ball.

[0017] In an embodiment the detection signal generator comprises a sound sensing means, in particular a microphone; and a sound processing means coupled to the sound sensing means for processing a sound signal received from the sound sensing means in order to determine whether the ball is kicked.

[0018] In an embodiment, the detection signal transmission system is a wireless transmission system, in particular operating at a frequency that is suitable to transmit over a distance of at least the distance of a diagonal of a play field. Considering that the diagonal is the largest possible distance between the ball and a referee, a wireless signal transmitted from the ball should at least be carried over such a distance. In practice, a frequency of 433 MHz appeared to be suitable. A transmission frequency may also be selected upon consideration of a requirement of a license to use such a frequency.

[0019] In an embodiment the signaling system comprises a flag, the observable signal generator being arranged in a part of the flag, in particular in a flag handle.

[0020] In an embodiment the signaling system comprises as an observable signal generator at least one of an audible signal generator, a visible signal generator and a tangible signal generator.

[0021] It is noted that the method and system according to the present invention may as well be employed in determining a handball, i.e. a foul by touching the ball with a hand. The method and system may also be employed for assisting a referee in determining which player was the last player to touch the ball before the ball went outside the play field.

[0022] Further, the method and system may be employed for assisting a referee in determining whether a ball passed a goal line

[0023] Hereinafter, the invention is elucidated with ref-

erence to the appended drawings showing non-limiting embodiments and wherein:

- Fig. 1A illustrates an embodiment of a method for generating a detection signal in accordance with the present invention;
- Fig. 1B illustrates an embodiment of a method for generating an observable signal in accordance with the present invention;
- Fig. 2A schematically shows a ball for use in an embodiment of a system according to the present invention;
- Fig. 2B schematically shows a signaling system for use in an embodiment of a system according to the present invention;
- Fig. 3 shows a graph of a sound signal produced by a ball when kicked;
- Fig. 4 schematically illustrates a ball in accordance with an embodiment of the present invention; and
- Fig. 5 schematically shows a handle of a flag for use in an embodiment of the present invention.

[0024] In the drawings, same reference numerals refer to same elements.

[0025] In Fig. 1A, a method is illustrated as a block diagram comprising a number of method steps. Initially, a system for performing the method may be in a power safe mode 101 in order to prevent a low energy level, when the system is to be used.

[0026] Then, the system is started in step 102. The system may be started by switching the system on using a suitable means, such as a start button or a remote controller. In an embodiment, the system may be automatically started, when it is detected that apart of the system, e.g. a ball, is moved.

[0027] In the method according to the present invention, a kick against a ball is to be detected and to be signaled to a referee, in practice usually a linesman of a football (soccer) game. When the ball is kicked, a sound is produced by the ball. In an embodiment of the method, the sound may be sensed by a suitable sensor, such as a microphone, as shown by step 103 in Fig. 1A. Of course, in other embodiments, the kick of the ball may be detected by other suitable systems, such as a button to be activated by a further referee, or by image processing.

[0028] The sound sensing means, e.g. the microphone, may be located at any suitable location. In an embodiment, the sound sensing means is arranged in the ball. In such an embodiment, a sound level of the sound produced by the ball is much higher than the sound level of a sound produced in the surroundings, e.g. by the players and/or spectators. Hence, the sound produced by the ball is easily distinguishable.

[0029] The sensed sound may be the sound produced due to a kick of the ball, including a header or a contact by a knee or any other contact of a player with the ball, i.e. any contact with a player that may lead to offside.

However, the sensed sound may as well be produced due to any other occurrence that may not lead to offside, such as a sound when the ball hits the ground. Therefore, in step 104, the sensed sound is processed in order to determine whether the sound was due to a kick. For example, the sensed sound may be digitized using a suitable analog-to-digital (A/D) converter and processed by a suitable microcontroller. The processing may include comparing the sensed signal with a predetermined signal, which predetermined signal is the signal of a kick of the ball. The processing may include, instead or additionally, spectral analysis of the sensed sound signal. Also other processing techniques may be employed.

[0030] Based on the processing results, in step 105, it is determined whether the ball was kicked, or not. If it is determined that the ball was kicked, a detection signal is generated in step 106. If it is determined, in step 105, that the ball was not kicked, the method returns to step 103.

[0031] Referring to Fig. 1B a signaling system for use in an embodiment of the method according to the present invention may be in a power safe mode as indicated by method step 111. In step 112, the signaling system may be activated from the power safe mode by pushing a button or by any other suitable means.

[0032] Once activated, the signaling system is configured to receive a detection signal as generated in accordance with the present invention, for example in accordance with embodiment as illustrated by Fig. 1A.

[0033] Thus, in steps 113 and 114, the signaling system is sensing whether a detection signal is received. If it is determined that the detection signal is received, an observable signal is generated. Such an observable signal may be an audible signal, a visible signal or a tangible signal, or a combination thereof. If it is determined that no detection signal is received (step 114), the method returns to step 113.

[0034] Fig. 2A shows an embodiment of a system for generating a detection signal. The system is comprised in a ball Ba. The system comprises an energy source ES_{3a} , a sensing means SM, a processing means PM and a transmission means TM.

[0035] The energy source ES_{3a} is configured to supply power to the other components. The energy source ES_{3a} may be any kind of suitable energy source, for example a battery, possibly a rechargeable battery. As the system is comprised in a ball Ba, the battery may advantageously be a small battery, e.g. a coin-shaped battery.

[0036] The sensing means SM may comprise a microphone for sensing a sound signal produced by the ball Ba, when it is kicked. Instead or additionally, the sensing means SM may comprise an acceleration sensor for measuring an acceleration of the ball Ba. Other suitable sensing means SM may as well be employed, possibly in combination. The sensing means SM outputs a sensed signal, e.g. a sound signal, and the sensed signal is supplied to the processing means PM.

[0037] The processing means PM may process the

sensed signal for determining from the sensed signal whether the ball Ba was kicked. In an embodiment, the processing means PM solely processes the sensed signal to prepare the sensed signal for transmission, thereby lowering power consumption of the processing means PM. The processed sensed signal is output by the processing means PM and is supplied to the transmission means TM.

[0038] The transmission means TM receives the output of the processing means PM and transmits the output, for example through a wireless transmission channel. If the processing means PM solely prepare the sensed signal for transmission, the transmission means TM continuously transmits the output of the processing means PM. In such an embodiment, the sensed signal is further processed at the receiver side, e.g. the signaling system, as is explained hereinafter. In an embodiment, wherein the processing means PM solely outputs, a detection signal, when it is determined that the ball Ba was kicked, the transmission means TM only transmits now and then, i.e. at times that a detection signal is output by the processing means PM. Thus, in such an embodiment, the power consumption of the transmission means TM may be relatively low.

[0039] Referring to Fig. 2B, a signaling system may be comprised in a flag F1 of a linesman. The signaling system may comprise a receiver means RM, a controller means CM, an actuator Ac and an energy source ES_{F1} for supplying power to the aforementioned components of the signaling system.

[0040] The receiver means RM is configured to receive a signal transmitted by the system of Fig. 2A. The signal may be a signal comprising a sensed signal and/or a detection signal as above described.

[0041] The controller means CM is configured to receive the received signal from the receiver means RM. The controller means CM determines from the received signal whether the ball Ba (Fig. 2A) was kicked. In case the received signal comprises a detection signal, the controller means CM may directly determine that the ball Ba was kicked. If the received signal does not comprise a detection signal, but does comprise the sensed signal, the controller means CM may comprise a processor for processing the sensed signal in order to determine whether the ball Ba was kicked based on the sensed signal. If it is determined that the ball Ba was kicked, an actuation signal is transmitted to the actuator Ac, which in response generates an observable signal. The actuator Ac may be a light output device, e.g. a lamp or LED, a sound generating device or a vibration generating device for generating a tangible signal, for example. A vibration generating device may be an eccentric motor means, for example.

[0042] Fig. 3 shows a graph of a sound signal produced by a ball when the ball is kicked. The horizontal axis represents time in milliseconds; the vertical axis represents a sound level (amplitude) on a logarithmic scale. Based on the amplitude and/or frequency content of the sound

signal, e.g. using spectral analysis, it may be determined what caused the signal, in particular whether the sound signal was due to a kick against the ball.

[0043] Fig. 4 shows a cross-section of a ball Ba in accordance with an embodiment of the present invention. The ball Ba comprises an inner ball IB and an outer ball OB. Between the inner ball IB and the outer ball OB a detection system circuit DSC is positioned. The detection system circuit DSC may comprise the components as shown in Fig. 2A, i.e. an energy source ES_{Ba} , a sensing means SM, a processing means PM and a transmission means TM.

[0044] The detection system circuit DSC may be arranged on a flexible printed circuit board (PCB) such that the PCB may assume a rounded/spherical shape in accordance with the round/spherical shape of the ball. In an embodiment, the PCB is not flexible, but is preshaped in accordance with the shape of the ball Ba. The energy source, e.g. a coin shaped battery, may be arranged on a first side of the PCB and preferably positioned between the outer ball OB and the PCB. The electronic components, e.g. a sensing means, a processing means and/or a transmission means, are preferably arranged at a second, side of the PCB, the second side being opposite to the first side, i.e. between the inner ball IB and the PCB. Thus, the battery may protect the electronic components against damage due to a kick at the ball Ba.

[0045] The transmission means of the detection system circuit DSC may comprise an antenna, in particular a loop antenna, for transmitting a detection signal or a detected signal. The loop antenna may be substantially two-dimensionally shaped and arranged on the PCB. The dimensions of the loop antenna may be, for example, 35 x 20 mm or 50 x 30 mm. The smaller antenna having dimensions 35 x 20 mm has a suitable transmission range and may be preferred due to its dimensions. The larger antenna having dimensions 50 x 30 mm is relatively large, but may be preferred due to its relatively low energy consumption.

[0046] A motion detection element may also be comprised in the detection system circuit DSC. For example, a piezo element may be arranged between the inner ball IB and the PCB. When the ball Ba starts to move, pressure is applied to the piezo element, which in response outputs an electrical signal. The electrical signal may be employed to indicate that the ball Ba is moving and the detection system is to leave a power safe mode (Fig. 1A) and to start.

[0047] It is noted that regulations may limit a weight of the ball Ba. Further, a relatively large weight at one side of the ball Ba may influence the behaviour of the ball Ba. Therefore, suitable lightweight components may be used. For example, the electronic components may be made from SMD components. In such a practical embodiment, the weight of the DSC may be about 10 g.

[0048] Fig. 5 shows a flag handle FH of a flag to be used by a linesman, i.e. one of the referee's, during a football (soccer) match. The flag handle FH comprises a

signaling system in accordance with the present invention and may, for example, be used in combination with the ball Ba as illustrated in Fig. 4.

[0049] Referring to Fig. 5, the flag handle FH comprises a battery level indicator LI indicating an energy level of a battery comprised in the flag handle FH and/or a energy level of the battery comprised in the ball Ba in order to prevent that either battery energy level will become too low for operation during a match.

[0050] The flag handle FH may further comprise a switch SW for switching the signaling system on or off. The switch SW may be a push button, for example. Thus, the linesman may push the switch SW, when a possible offside situation occurs such that the signaling system only provides the observable signal in such a situation instead of during the whole match.

[0051] The flag handle FH may further comprise a ball selector switch BS. Presuming that the flag handle FH is to operate with the ball Ba as shown in Fig. 4, each ball Ba may have an identification code. The identification code may be transmitted with the transmitted signals. The use of an identification code prevents that signals from any other ball, not used in the match, are received and interpreted, which could lead to misjudgments. The ball selector switch BS allows to use the flag and flag handle FH in combination with a number of balls.

[0052] In order to enable the signaling system of the flag handle FH to be used in combination with a further number of balls, the flag handle FH may comprise a memory reader MR e.g. comprising a subscriber identity module (SIM) card reader. The memory reader MR may receive and read a memory card SIM. On the memory card one or more identification codes of a number of corresponding balls is stored. In combination with the ball selector switch SW, for example, the identification code of the ball to be used in the match may be selected from the memory card.

[0053] The method and system according to the present invention may as well be advantageously used for assisting a referee to determine which player had the last contact with the ball. The method and system allow determining whether an apparent contact with the ball was an actual contact with the ball, since the method and system may indicate when there is a contact with the ball. Similarly, the method and system may assist in detecting a handball, i.e. a contact of a hand with the ball. Such a contact detection method and system may as well be employed for assisting a referee in other games and sports, such as volleyball.

[0054] Although detailed embodiments of the present invention are disclosed herein, it is to be understood that the disclosed embodiments are merely exemplary of the invention, which can be embodied in various forms. Therefore, specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a basis for the claims and as a representative basis for teaching one skilled in the art to variously employ the present invention in virtually any appropriately

detailed structure. Further, the mere fact that certain measures are recited in mutually different dependent claims does not indicate that a combination of these measures cannot be used to advantage.

[0055] Further, the terms and phrases used herein are not intended to be limiting; but rather, to provide an understandable description of the invention. The terms "a" or "an", as used herein, are defined as one or more than one. The term another, as used herein, is defined as at least a second or more. The terms including and/or having, as used herein, are defined as comprising (i.e., open language). The term coupled, as used herein, is defined as connected, although not necessarily directly.

Claims

1. Method for detecting an offside situation during a soccer game, the method comprising:

- generating a detection signal when a ball is kicked by a first player;
- supplying the detection signal to a signaling system; and
- generating by the signaling system an observable signal to be observed by a referee, in response to receipt of the detection signal.

2. Method according to claim 1, wherein the method further comprises:

- detecting a position of a second player by the referee at the moment of observation of the observable signal.

3. Method according to claim 1 or 2, wherein the method further comprises:

- sensing a sound signal produced by the ball;
- processing the sound signal in order to determine whether the ball is kicked;
- if it is determined that the ball is kicked, generating the detection signal.

4. Method according to any of the preceding claims, wherein generating a detection signal comprises:

- compiling a content signal of the detection signal, the content signal of the detection signal comprising at least one element of the group comprising detected sound information data and a ball identification code.

5. Method according to any one of the preceding claims, wherein the method further comprises:

- generating the detection signal in the ball; and wirelessly transmitting the detection signal from

the ball to the signaling system.

6. Method according to any one of the preceding claims, wherein the observable signal comprises a signal selected from the group comprising an audible signal, a visual signal, and a tangible signal.

7. Method according to claim 6, wherein the observable signal comprises a tangible signal, and the step of generating an observable signal comprises:

- generating a vibration in an object to be in contact with a body part of the referee, the object e.g. being a flag handle or a wrist device.

8. System for detecting an offside situation during a soccer game, the system comprising:

- a detection signal generator for generating a detection signal when a ball is kicked by a player;
- a detection signal transmission system for supplying the detection signal from the detection signal generator to a signaling system;
- an observable signal generator comprised in the signaling system for generating, in response to receipt of the detection signal, an observable signal to be observed by a referee.

9. System according to claim 8, wherein the detection signal generator is arranged in the ball.

10. System according to claim 8 or 9, wherein the detection signal generator comprises:

- a sound sensing means, in particular a microphone; and
- a sound processing means coupled to the sound sensing means for processing a sound signal received from the sound sensing means in order to determine whether the ball is kicked.

11. System according to any one of the claims 8 - 10, wherein the detection signal transmission system is a wireless transmission system, in particular operating at a frequency that is suitable to transmit over a distance of at least the distance of a diagonal of a play field.

12. System according to any one of the claims 8-11, wherein the signaling system comprises a flag, the observable signal generator being arranged in a part of the flag, in particular in a flag handle.

13. System according to claim 12, wherein the signaling system comprises as an observable signal generator at least one of an audible signal generator, a visible signal generator and a tangible signal generator.

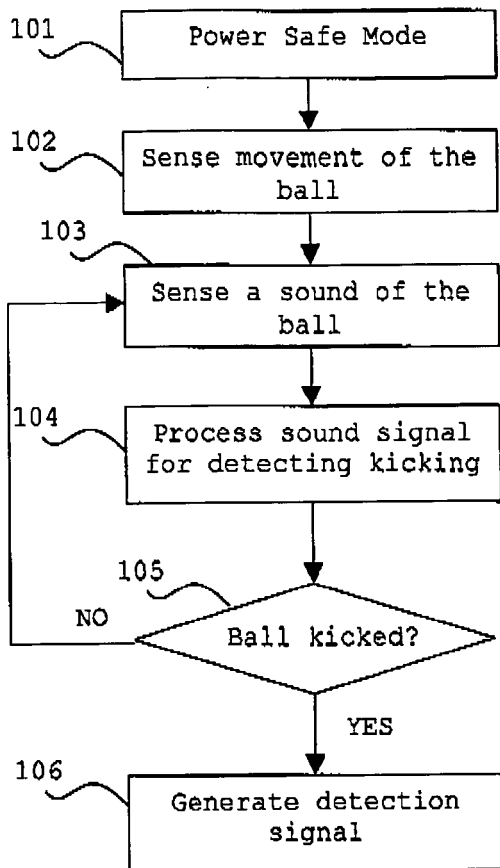


FIG. 1A

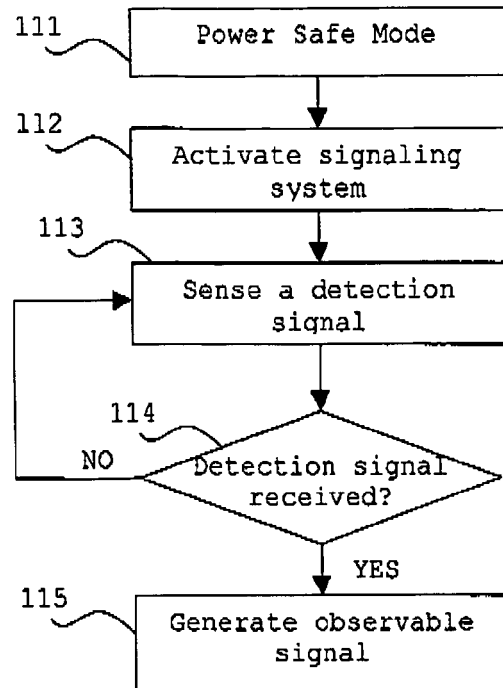


FIG. 1B

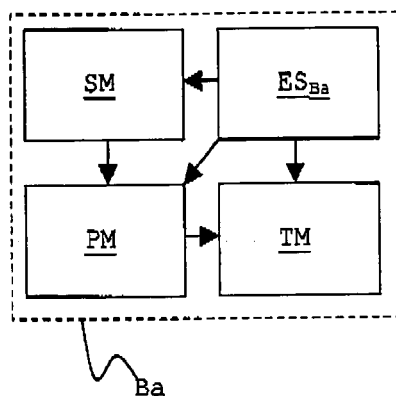


FIG. 2A

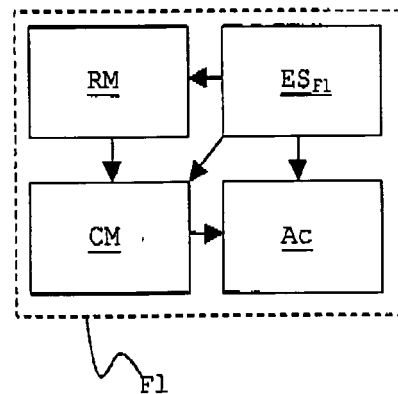


FIG. 2B

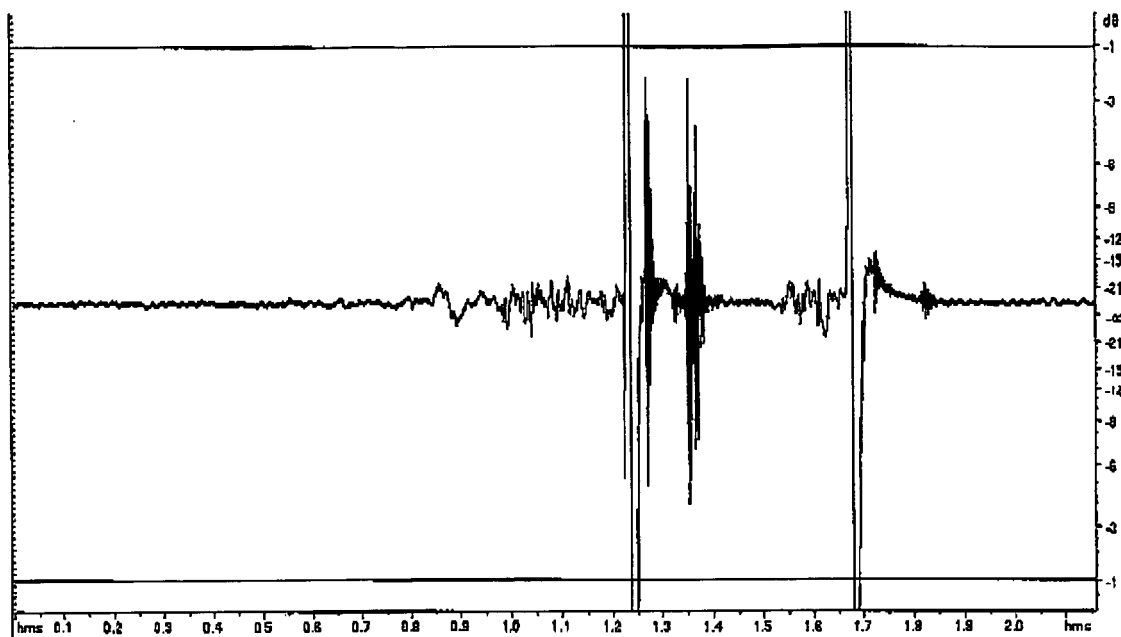


FIG. 3

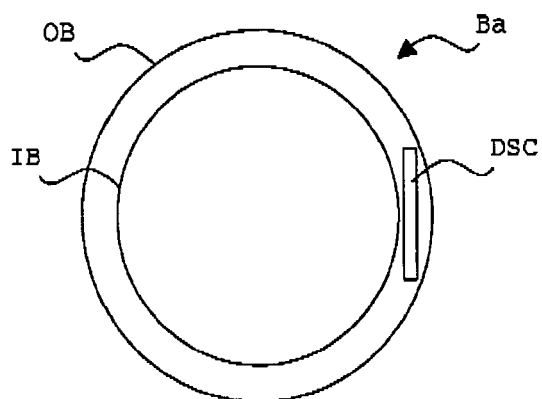


FIG. 4

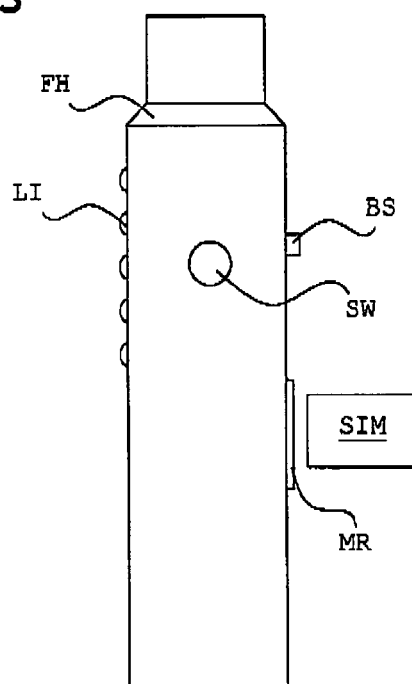


FIG. 5



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 00 0396

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	BE 1 015 552 A6 (PENEZY RODRIGUEZ) 7 June 2005 (2005-06-07)	1,2,4-9, 11	INV. A63B71/06
Y	* the whole document *	3,10	
A	-----	13	ADD. A63B43/00
Y	WO 97/20449 A (SOUNDBALL) 5 June 1997 (1997-06-05)	3,10	
A	* the whole document *	1,4-6,8, 9,11	
X	EP 1 538 456 A (AC COLLECTION) 8 June 2005 (2005-06-08)	1,2,6-8, 11-13	
	* paragraphs [0004] - [0010]; figure 1 *		
X	EP 1 199 089 A (GARRIGUES) 24 April 2002 (2002-04-24)	1,2,6-8, 11-13	
	* the whole document *		
X	US 2006/178235 A1 (COUGHLAN ET AL.) 10 August 2006 (2006-08-10)	1,2,4-6, 8,9,11	
	* paragraph [0016] - paragraph [0024]; figures 1,2 *		TECHNICAL FIELDS SEARCHED (IPC)
X	WO 2006/111928 A (FEDERAZIONE ITALIANA GIUOCO CALCIO) 26 October 2006 (2006-10-26)	1,2,4, 6-8,11	A63B
A	* page 10, line 21 - page 13, line 20 *	3,10	
A	WO 2006/097357 A (FLUIDS GMBH) 21 September 2006 (2006-09-21)	1-6,8-11	
	* page 2, line 9 - line 20 *		
	* page 9, line 9 - line 18 *		
	* page 23, line 14 - page 27, line 13; claims 1,2 *		

The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		20 July 2007	Williams, Mark
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

3

EPO FORM 1503 03.02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 00 0396

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

20-07-2007

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
BE 1015552	A6	07-06-2005	NONE	

WO 9720449	A	05-06-1997	AT 195210 T	15-08-2000
			AU 1034897 A	19-06-1997
			BR 9611798 A	28-12-1999
			CN 1211379 A	17-03-1999
			DE 69609626 D1	07-09-2000
			EA 895 B1	26-06-2000
			EP 0864245 A1	16-09-1998
			JP 2000500943 T	25-01-2000

EP 1538456	A	08-06-2005	BE 1015809 A6	06-09-2005

EP 1199089	A	24-04-2002	WO 0102067 A1	11-01-2001

US 2006178235	A1	10-08-2006	NONE	

WO 2006111928	A	26-10-2006	NONE	

WO 2006097357	A	21-09-2006	DE 102005013225 A1	28-09-2006
