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(54) **SYSTEM FOR THE SIGNALING AND MANAGEMENT OF EMERGENCY CALLS FOR
MOTORCYCLES**

SYSTEM ZUR SIGNALISIERUNG UND VERWALTUNG VON NOTRUFEN FÜR MOTORRÄDER

SYSTÈME DE SIGNALISATION ET DE GESTION D'APPELS D'URGENCE POUR MOTOCYCLES

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Description

Technical Field

[0001] The present invention relates to a system for the signaling and the management of emergency calls for motorcycles such as, e.g. motorcycles, mopeds, scooters and other two-wheeled vehicles.

Background Art

[0002] For the users of such vehicles, a priority requirement is that the utmost level of safety is ensured both during riding and in case of accidents.

[0003] Within the first case fall a whole series of preventive and protective measures covering different fields, from the technical (electronic vehicle control devices, helmets and protective oversuits, maintenance intervention programs, etc.) to educational/training (training and information courses, fines and other disciplinary sanctions, etc.).

[0004] As regards safety, in case of an accident occurring, it is instead important, besides minimizing damage/injury from impact, to ensure prompt first-aid in order to quickly reach the user to whom the accident has occurred.

[0005] Very often, in fact, vehicle users can have accidents to which there are no witnesses and so, in the case of loss of consciousness or physical impossibility caused by conditions of inability of various kinds, it is impossible for the injured user to contact the emergency services.

[0006] In such a situation, the need is known to reduce emergency service intervention times in case of an accident.

[0007] A reduction in intervention times, in fact, would result in a big saving of human lives, but also in a reduction of the seriousness of the injuries of those involved in the accident and a quick return to traffic regularity, with a consequent drop in the related inconveniences (secondary accidents, road jams, slowdowns, etc.).

[0008] The European Union has furthermore mandated (starting on 31 March 2018), that all new vehicles to be equipped with life-saving systems compatible with the e-Call assistance service.

[0009] Such service provides for the assisted or automatic call of emergency services in the case of an emergency.

[0010] In such context, the need is known to also extend the e-Call service to the motorcycle sector, to be able to increase the safety level for users of this category of vehicles as well.

[0011] Systems exist based on the application of detection devices designed to read data to be processed to signal the occurrence of accidents.

[0012] A drawback of these known systems is tied to the low accuracy whereby alarm situations are recognized and to the lack of information of emergency serv-

ices on the state of health of the rider involved in the accident.

[0013] This latter information is decisive for deciding the rapidity and procedures of intervention of the emergency services, avoiding any waste of time, in the case of non-serious accidents, or making the organization of emergency operators easier in the case of serious accidents

[0014] EP 2 908 299 A1 discloses a system for the signalling and management of emergency calls for motorcycles comprising a first electronic device associable with a user and a second electronic device fixed to a motorcycle.

Description of the Invention

[0015] The main aim of the present invention is to provide a system for the signaling and the management of emergency calls for motorcycles which permits increasing the level of safety for motorcycle users.

[0016] Within this aim, one object of the present invention is to provide a system for the signaling and the management of emergency calls for motorcycles which permits, in case of need, rapid, prompt and efficient communication with the emergency services, i.e., aimed at providing emergency intervention in the best possible way according to the seriousness of the accident which has occurred.

[0017] Another object of the present invention is to provide a system for the signaling and the management of emergency calls for motorcycles which can be integrated in the e-Call service recognized by the European Union.

[0018] Another object of the present invention is to provide a system for the signaling and the management of emergency calls for motorcycles which allows to overcome the mentioned drawbacks of the prior art within the ambit of a simple, rational, easy and effective to use as well as affordable solution.

[0019] The above mentioned objects are achieved by the present system for the signaling and the management of emergency calls for motorcycles having the characteristics of claim 1.

Brief Description of the Drawings

[0020] Other characteristics and advantages of the present invention will become better evident from the description of a preferred, but not exclusive, embodiment of a system for the signaling and the management of emergency calls for motorcycles, illustrated by way of an indicative, but non-limiting, example in the accompanying drawings, in which:

Figure 1 is a general axonometric view of a form of use of the system according to the invention;
Figures 2 and 3 are schematic illustrations of the system according to the invention.

Embodiments of the Invention

[0021] With particular reference to such figures, globally indicated with reference number 1 is a system for the signaling and the management of emergency calls for motorcycles.

[0022] The system 1 comprises a first electronic device 2 associable with a user A of a motorcycle B.

[0023] Advantageously, the first device 2 is integrated in the helmet of the user A so as to improve its stability during riding.

[0024] Such solution allows a protection of the first device 2 so as to avoid any damage in case of knocks and loss of functionality.

[0025] Solutions cannot be ruled out wherein the first device 2 is associable either with the helmet of the user A, or fitted in a piece of clothing (oversuits, jacket, boots or other clothing), or in a wearable accessory (a bracelet, a smartwatch or other similar accessories).

[0026] The first device 2 has a first detection unit 3 of kinematic data of the motion of the user A.

[0027] In the present treatise, by "kinematic data" shall be meant the data referred to the fundamental kinematic quantities (movement, acceleration and speed) and to the angles of inclination of the user A with respect to at least three mutually orthogonal directions.

[0028] Advantageously, the first detection unit 3 comprises an acceleration detection sensor 4.

[0029] This way it is possible to obtain data referred to the acceleration of the user A.

[0030] In the present embodiment, the acceleration detection sensor 4 is of the type of an accelerometer.

[0031] The use of other types of sensors cannot be ruled out adapted to detect the accelerations of the user A, just as different solutions cannot be ruled out which provide for the use of several acceleration detection sensors 4.

[0032] Advantageously, the first detection unit 3 also comprises an inclination detection sensor 5.

[0033] The inclination detection sensor 5 is, preferably, of the type of a gyroscope and is adapted to detect the angular inclinations with respect to at least three mutually orthogonal axes (detections on several axes cannot be ruled out).

[0034] This way, the first detection unit 3 will be able to detect both data on the accelerations and data on the angular inclinations of the user A.

[0035] The first device 2 comprises a biometric detection unit 17 adapted to detect the biometric data of the user A.

[0036] In the present treatise, by "biometric data" shall be meant those data adapted to provide indications on the vital signs of the user him/herself such as, e.g., oxygenation of the blood, heartbeat frequency, and other data useful for monitoring the vital condition of the patient.

[0037] Conveniently, the biometric unit 17 comprises a group of biometric sensors intended to come into contact with the user A for the purpose of detecting his/her

biometric data.

[0038] The group of biometric sensors, for simplicity not shown in the illustrations, conveniently comprises both biometric sensors fitted directly to the helmet of the user A, and biometric sensors fitted on auxiliary elements such as bracelets, watches, smartwatches, and similar devices.

[0039] Preferably, the biometric detection unit 17 comprises at least an optical refraction sensor for the optical detection of biometric data, in particular data referred to the oxygenation of the blood and to the heartbeat frequency, useful for processing the plethysmographic wave of the user A and for estimating his/her blood pressure.

[0040] Advantageously, the first device 2 also comprises an audio-phonetic unit 18 for vocal communications between the user A and external entities, e.g., the emergency units.

[0041] This way, the user A can communicate without necessarily making use of mobile phones, extending the possibilities of aid even in the case in which the mobile phone has been lost during the accident.

[0042] The first device 2 also comprises a first radio-wave transceiver unit 6 adapted to receive/transmit data.

[0043] In particular, the first transceiver unit 6 comprises a Wi-Fi transceiver.

[0044] This solution allows taking advantage of the Wi-Fi technology to transmit the data collected from the first device 2.

[0045] The use of different transceivers, such as Bluetooth, cannot be ruled out.

[0046] Conveniently, the first transceiver unit 6 comprises, besides the Wi-Fi transceiver, also other transceivers, for simplicity not shown in the illustrations, e.g., other Wi-Fi transceivers, Bluetooth transceivers, low-frequency transceivers and the like, adapted to communicate the data to other devices according to different modes depending on the technologies used.

[0047] Different combinations of transceivers with respect to those listed above cannot be ruled out.

[0048] This characteristic allows connecting the first device 2 to a second device 7.

[0049] The system 1, in fact, comprises a second electronic device 7 fixed to at least a part of the motorcycle B.

[0050] In particular, the second device 7 can be integrated in the motorcycle, e.g., fixed in the frame, or inside the dashboard.

[0051] The second device 7 has a localization unit 8 for locating the geographical position of the motorcycle B.

[0052] In the present embodiment, the localization unit is of the GNSS satellite receiver type adapted to receive a signal from a constellation of satellites (e.g., GPS) to detect the geographical position of the motorcycle B in a geo-referencing system.

[0053] Advantageously, the first device 2 comprises at least a light emitter, not shown in the illustrations, adapted to emit a signaling light in case of an accident having occurred.

[0054] This way, the presence can be signaled of the first device 2, making it easier to find the user A in case of him/her being lost.

[0055] Conveniently, the light emitter is of the type of an intermittent high-luminosity led light able to signal the position including visibly in case of a night accident or poor visibility.

[0056] The second device 7, in the same way as the first device 2, has a second radio-wave transceiver unit 9 adapted to receive/transmit data.

[0057] Conveniently, the second transceiver unit 9 comprises a Wi-Fi transceiver compatible with that relating to the first transceiver unit 6.

[0058] In fact, the second transceiver unit 9 is adapted to enter into communication with the first transceiver unit 6 and, therefore, connect the first device 2 with the second device 7 by means of a data exchange.

[0059] This way, it is also possible to localize the first device 2 with respect to the second device 7, thus permitting a localization of both devices.

[0060] The second transceiver unit 9, furthermore, comprises at least a GSM/UMTS transceiver.

[0061] This way, the data can also be transmitted to other devices placed at large distances using the GSM/UMTS transmission technologies.

[0062] Solutions cannot be ruled out that provide for a second transceiver unit 9 comprising different types of transceivers, similarly to what described for the first transceiver unit 6.

[0063] The second device 7 also comprises a second detection unit 10 of kinematic data of the motion of the motorcycle B, similar to those of the user A described above.

[0064] In the same way as the first detection unit, the second detection unit 10 comprises an acceleration detection sensor 4 (in the present embodiment it is an accelerometer) so as to be able to obtain data referred to the acceleration of the motorcycle B.

[0065] In this case as well, the use cannot be ruled out of other types of sensors adapted to detect the accelerations of the user A, just as different solutions are not ruled out which provide for the use of several acceleration detection sensors 4.

[0066] As shown in the illustrations, the second detection unit 10 also comprises an inclination detection sensor 5, this too of the type of a gyroscope.

[0067] This way, the second detection unit 10 is also able to detect the inclinations of the motorcycle B.

[0068] The system 1 then comprises a remote control station 11, operatively connected to at least one of the first device 2 and the second device 7 to signal and manage emergency calls.

[0069] In particular, the first device 2 and the second device 7 send, directly or indirectly, through the respective transceiver units 6, 9, the data detected from the detection units 3, 10 to the remote control station 11 which, depending on the type of information received, signals any emergency situations and manages the

emergency calls (schematically illustrated in Figure 3 and indicated by the letter C).

[0070] In the present embodiment, the first device 2 sends data to the second device 7 which, in turn, sends everything to the remote control station 11.

[0071] Advantageously, the data transmitted to the remote control station 11 are already processed by at least one of the devices 2, 7.

[0072] In particular, the first device 2 comprises at least a first data processing unit 12 operatively connected to the first detection unit 3 for the reception of the kinematic data.

[0073] Conveniently, the first data processing unit 12 is also associated with the biometric unit 17 for the reception of biometric data, and is associated with the audio-phonetic unit 18 for the reception of vocal information.

[0074] The alternative solution cannot be ruled out whereby the first data processing unit 12 is only associated with the detection unit 3 or only with the biometric unit 17.

[0075] The data arriving in the first data processing unit 12 are precisely processed and translated into information.

[0076] Conveniently, the first data processing unit 12 comprises a digital motion processor (DMP).

[0077] Such processor processes the kinematic data received and translates them into information on accelerations and inclinations.

[0078] Such information, compared with pre-set parameters or with other information, is essential for determining whether or not an accident has occurred.

[0079] The first data processing unit 12, in fact, is operatively connected to the first transceiver unit 6 for the transmission of the processed data.

[0080] The second device 7 also comprises at least a second data processing unit 13 operatively connected to the second detection unit 10 for the reception of the relevant kinematic data.

[0081] Similarly to what has been written above, the second data processing unit 13 also comprises a DMP processor adapted to process the data received to provide information useful for determining whether or not an accident has occurred.

[0082] In particular, the second data processing unit 13 is operatively connected to the second transceiver unit 9 both for the reception of data coming from the first device 2, and for the transmission of processed data to the remote control station 11.

[0083] More in particular, the second data processing unit 13 can receive the data processed by the first device 2 and use them to process information concerning the comparison of the kinematic data relating to the user A and to the motorcycle B, returning information at output useful for determining, for example, the occurrence of a collision, the fall of the user A or other occurrences.

[0084] The second device 7 comprises at least a control unit 19 operatively connected to the second data processing unit 13 for the reception of the processed data

so as to define the seriousness of the accident occurred.

[0085] The control unit 19 processes the data received from the second data processing unit 13 and defines the seriousness of the accident on the basis of preset parameters comparable with the processed data themselves.

[0086] Conveniently, the seriousness of the accident can be determined on a scale which comprises four classes, consistently with the levels of seriousness of the emergencies managed at the emergency unit in order of growing seriousness identified with white, green, yellow and red codes.

[0087] The control unit 19 is also associated with the biometric detection unit 17 for the control of the operating condition of the latter.

[0088] In the event of the seriousness of the accident exceeding a certain threshold, the control unit 19 regulates the operating condition of the biometric detection unit 17, e.g., by starting the monitoring of the vital signs of the injured user A, or by varying the sampling frequency of the data themselves.

[0089] The control unit 19 is associated with the audio-phonetic unit 18 for the vocal interaction of a user with the system.

[0090] This way, the user can interact with the system with vocal commands adapted to answer any requests by the system, and to inform the emergency services in order to help with recovery and rescue operations.

[0091] This way, the user A can answer external calls even when he/she is unable to answer manually, e.g., in the event of not being able to move his/her limbs.

[0092] All pieces of information can be transmitted to the remote control station 11 for any signaling to the emergency services.

[0093] In the embodiment schematically shown in the illustrations, the second device comprises a storage unit 14 adapted to store the kinematic data, the processed data and other data which can be preset by the user A (date, time and other extra information).

[0094] This way the risk is minimized of the information being lost and this is made available for future analysis.

[0095] The use of a further storage unit 14 cannot be ruled out, e.g. arranged on the first device 2, or of multiple storage units 14 arranged on both devices 2, 7.

[0096] Still with reference to the present embodiment, the second device 7 comprises at least a data connection unit 15, for simplicity called connection unit 15, adapted to be connected to one or more external peripheral units 16 such as, e.g., smartphones, tablets, PCs, infotainment systems and other similar peripheral units.

[0097] This way, the data detected and processed by the devices 2, 7 are made available for a monitoring personalized on the needs of the user A.

[0098] For example, the system 1, being able to communicate with the peripheral units 16, can also perform the function of an alarm system, communicating the unauthorized moving away of the motorcycle B, or as a fire-fighting system, communicating a specific signal.

[0099] Conveniently, the first device 2 comprises attachment means to a motorcyclist helmet, for simplicity not shown in the illustrations.

[0100] The attachment means comprise adhesive elements adapted to fix the first device to the helmet, or fastening and release elements obtained both on the first device and on the helmet, such as pressure-coupling clips, Velcro fabrics, or a combination of these.

[0101] In the case in which the first device was intended to be attached to a garment of the user A, e.g. the over-suit, similar considerations can be made.

[0102] The same also applies to the case in which the first device was intended to be attached to an accessory, such as a bracelet or the like.

[0103] The second device 7, instead, comprises attachment means to a motorcycle B.

[0104] In this case, the attachment means comprise elements for slotting into the motorcycle dashboard, or connection elements, screw-nut screw systems, prismatic joints, and other similar solutions adapted to fix the second device to the motorcycle B.

[0105] The embodiment described above illustrates a system 1 comprising a first device 2 and a second device 7.

[0106] Alternative solutions cannot be ruled out in which the system 1 comprises a greater number of first devices 2 and second devices 7.

[0107] The operation of the present invention is as follows.

[0108] The first device 2, fixed to the user A, is activated to acquire and transmit data.

[0109] The second device 7, placed on the vehicle, enters into communication with the first device 2.

[0110] Both devices 2, 7 communicate with the remote control station 11 by sending information and data both regarding to the trip and to conditions of the user A.

[0111] In particular, the first detection unit 3, by means of the sensors 4 and 5, acquires the data relating to the acceleration and to the inclinations of the user A.

[0112] The biometric detection unit 17 detects the biometric data of the user such as blood oxygenation and heartbeat frequency.

[0113] The first data processing unit 12 receives the data detected by the detection unit 3 and, in the case of its being activated, also the biometric unit 17, processing them and translating them into information.

[0114] The first transceiver unit 6 sends the processed data and information to the second device 7 communicating with the second transceiver unit via Wi-Fi.

[0115] In parallel, the second device 7 is activated to acquire and transmit data relating to the motorcycle B.

[0116] The second detection unit 10, by means of the sensors 4 and 5, acquires the data relating to the acceleration and to the inclinations of the motorcycle B.

[0117] The localization unit 8, instead, acquires data on the geographical position of the motorcycle B, localizing the latter in a system of geo-referencing coordinates.

[0118] The second data processing unit 13 receives the data from the detection unit 10, the data of the first device 2 and the data from the localization unit 8 and processes them.

[0119] This way, besides obtaining information on the inclinations and accelerations of the motorcycle B, such information can be compared with the accelerations and inclinations of the user A, besides localizing the user A with respect to the motorcycle B.

[0120] From this comparison, calibrated on specific control parameters, it is possible to determine the accident occurred.

[0121] The control unit 19, in fact, receives the data processed by the processing unit 13 and defines the seriousness of the accident.

[0122] The control unit 19, according to the seriousness of the accident, connects up to the biometric detection unit 17, controlling its functionality, e.g., increasing the sampling frequency of the biometric data so as to provide continuous monitoring of the health conditions of the injured user.

[0123] The transceiver unit 9, in particular by means of the GSM/UMTS transceiver, sends the information about the accident and the processed data to the remote control station 11.

[0124] In case of an accident, the remote control station 11 ensures the start of the accident signaling procedure, managing the emergency calls to the emergency services C.

[0125] Furthermore, the connection unit 15 permits accessing the data of the second device 7 by means of any one peripheral unit 16 connected to it, permitting a continuous monitoring of the traveling user A and permitting the remote control of the motorcycle B (alarm system).

[0126] The peripheral unit 16, furthermore, can be used to manually intervene on the signaling of the accident, so as to avoid the involvement of the emergency services in cases not strictly necessary.

[0127] For example, in case of an accident being occurred, the second device 7 sends a signal to the peripheral unit 16, which is translated to a request addressed to the user.

[0128] Such request consists in providing the user with an activity to be performed, e.g., answering a message on smartphone, or pressing a button, or deactivating a sound impulse, or answering a vocal command.

[0129] If the user answers the request, the accident is classified with low level of seriousness and the system can be deactivated by the user him/herself.

[0130] If the user does not answer the request, the accident is classified with high level of seriousness and the system activates all the communications and procedures needed for the emergency services to intervene.

[0131] The audio-ponic unit 18, in fact, besides operating as an intercom, putting in communication several users having other compatible audio-ponic units, permits vocal interaction with the control unit 19 and with the system 1.

[0132] It has in fact been ascertained how the described invention achieves the intended objects and in particular the fact is underlined that the provided system for the signaling and the management of emergency calls for motorcycles permits increasing the level of safety for motorcycle users.

[0133] The devised system in fact permits, in case of need, rapid and prompt communication with the emergency services, including in the case of the user losing consciousness.

[0134] The control unit and the data processing units, in particular, permit defining the level of seriousness of a possible accident, permitting a differentiation of the intervention procedures.

[0135] In the case of less serious accidents, for example, the user may be informed of the alarm situation and if necessary may choose to disable the system avoiding pointless intervention.

[0136] In the case of more serious accidents, on the other hand, the system will proceed gradually, first of all recognizing the occurrence of the accident, then defining the level of seriousness and finally notifying the emergency services.

[0137] Thanks to the audio-ponic unit and to the GSM/UMTS transceiver, the user A can communicate with the emergency services, including without having to use a mobile phone.

[0138] Moreover, still thanks to the audio-ponic unit, the user A can vocally interact with the system 1.

[0139] In so doing, the user, if conscious and in his/her senses, can help the first-aid intervention so that the emergency services reach the site prepared and can interact with the system even in extreme conditions, e.g., with limbs out of action.

[0140] The connection with the biometric detection unit provides valid support for the emergency services themselves which, thanks to the data received, will be able to monitor the user's vital signs and prepare the emergency operations in advance.

[0141] Furthermore, the biometric detection unit provides information that could be used to reconstruct the dynamics which have led to an accident situation, e.g., the identification of a sudden illness.

[0142] The combination of the transceiver units of the GSM/UMTS type with the localization and detection units permits detecting anomalous vehicle movements, localizing it and sending an alarm signal to the user, thereby carrying out the function of an anti-theft device.

[0143] Because, therefore, the system can perform various functions at the same time (emergency call, monitoring, anti-theft), it increases all levels of safety, not only those referred to the safety of the user, but also those referred to the protection of personal assets (anti-theft, fire protection).

[0144] Furthermore, the devised system is compatible with the e-Call service recognized by the European Union, inasmuch as it complies with the requirements needed to start the automatic emergency procedures required

in case of an accident.

Claims

1. System (1) for the signaling and management of emergency calls for motorcycles, comprising:

- at least a first electronic device (2) associable with a user (A) of a motorcycle (B) and having

at least a first detection unit (3) of kinematic data of the motion of the user (A),
a first radio-wave transceiver unit (6) associated at least with said first detection unit (3) and adapted to receive/transmit data,
a biometric detection unit (17) adapted to detect the biometric data of said user (A);

- at least a second electronic device (7) fixed to at least a part of said motorcycle (B), having

at least a localization unit (8) for locating the geographical position of said motorcycle (B),

at least a second radio-wave transceiver unit (9) adapted to receive/transmit data,
a second detection unit (10) of kinematic data of the motion of said motorcycle (B),
at least a second data processing unit (13) operatively connected to said second detection unit (10) for the reception of the relevant kinematic data; and

- at least a remote control station (11), operatively connected to at least one of said first device (2) and said second device (7) to signal and manage emergency calls;

wherein said second device (7) comprises at least a control unit (19) operatively connected to the second data processing unit (13) for the reception of the processed data so as to determine the seriousness of the accident occurred, and

wherein the control unit (19) is adapted to control the functionality of said biometric detection unit (17) according to the seriousness of the accident.

2. System (1) according to claim 1, **characterized by** the fact that said first device (2) comprises at least an audio-phononic unit (18).

3. System (1) according to claim 1, **characterized by** the fact that said biometric detection unit (17) comprises at least an optical refraction sensor for the optical detection of biometric data.

4. System (1) according to one or more of the preceding claims, **characterized by** the fact that at least one of said first detection unit (3) and said second detection unit (10) comprises, respectively, an acceleration detection sensor (4) and an inclination detection sensor (5).

5. System (1) according to one or more of the preceding claims, **characterized by** the fact that said first device (2) comprises at least a first data processing unit (12) operatively connected to:

- said first detection unit (3) for the reception of kinematic data to be processed to determine the occurrence of an accident; and
- said first transceiver unit (6) for the transmission of processed data.

6. System (1) according to one or more of the preceding claims, **characterized by** the fact that said first device (2) comprises at least a first data processing unit (12) operatively connected to said biometric detection unit (17) for the reception of said biometric data.

7. System (1) according to one or more of the preceding claims, **characterized by** the fact that said second data processing unit (13) is operatively connected to said second transceiver unit (9) for the reception of data coming from said first device (2) and for the transmission of processed data to said remote control station (11).

8. System (1) according to claim 2, **characterized by** the fact that said control unit (19) is associated with said audio-phononic unit (18) for the vocal interaction with said user (A).

9. System (1) according to one or more of the preceding claims, **characterized by** the fact that at least one of said first device (2) and said second device (7) comprises at least a storage unit (14) adapted to store kinematic data, biometric data, processed data and other preset data.

10. System (1) according to one or more of the preceding claims, **characterized by** the fact that at least one of said first device (2) and said second device (7) comprises at least a data connection unit (15) adapted to be connected to at least an external peripheral unit (16).

11. System (1) according to one or more of the preceding claims, **characterized by** the fact that said first transceiver unit (6) comprises at least a Wi-Fi transceiver.

12. System (1) according to one or more of the preceding claims, **characterized by** the fact that said second

transceiver unit (9) comprises at least a GSM/UMTS transceiver.

13. System (1) according to one or more of the preceding claims, **characterized by** the fact that said first device (2) comprises attachment means to a motorcyclist helmet. 5
14. System (1) according to one or more of the preceding claims, **characterized by** the fact that said second device (7) comprises attachment means to a motorcycle. 10
15. System (1) according to one or more of the preceding claims, **characterized by** the fact that it comprises classification means of the seriousness of an accident occurred associated with said first data processing unit (12) and with said second data processing unit (13). 15

Patentansprüche

1. System (1) zum Signalisieren und zur Verwaltung von Notrufen für Motorräder, umfassend: 25
 - mindestens eine erste elektronische Vorrichtung (2), die einem Benutzer (A) eines Motorrads (B) zuordbar ist, aufweisend 30
 - mindestens eine erste Erfassungseinheit (3) von kinematischen Daten der Bewegung des Benutzers (A),
 - eine erste Radiowellen-Sende-Empfangseinheit (6), die zumindest mit der ersten Erfassungseinheit (3) verbunden ist und geeignet ist, Daten zu empfangen/ zu senden, 35
 - eine biometrische Erfassungseinheit (17), die geeignet ist, die biometrischen Daten des Benutzers (A) zu erfassen; 40
 - mindestens eine zweite elektronische Vorrichtung (7), die an mindestens einem Teil des Motorrads (B) befestigt ist, aufweisend 45
 - mindestens eine Lokalisierungseinheit (8) zum Lokalisieren der geografischen Position des Motorrads (B),
 - mindestens eine zweite Radiowellen-Sende-Empfangseinheit (9), die geeignet ist, Daten zu empfangen/ zu senden, 50
 - eine zweite Erfassungseinheit (10) von kinematischen Daten der Bewegung des Motorrads (B),
 - mindestens eine zweite Datenverarbeitungseinheit (13), die operativ mit der zweiten Erfassungseinheit (10) verbunden ist, zum Empfang der relevanten kinemati-

schen Daten; und

- mindestens eine Fernsteuerungsstation (11), die operativ mit mindestens einer der ersten Vorrichtung (2) und der zweiten Vorrichtung (7) verbunden ist, um Notrufe zu signalisieren und zu verwalten;

wobei die zweite Vorrichtung (7) mindestens eine Steuereinheit (19) umfasst, die operativ mit der zweiten Datenverarbeitungseinheit (13) für den Empfang der verarbeiteten Daten verbunden ist, um die Schwere des aufgetretenen Unfalls zu bestimmen, und wobei die Steuereinheit (19) angepasst ist, die Funktionalität der biometrischen Erfassungseinheit (17) entsprechend der Schwere des Unfalls zu steuern.

2. System (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** die erste Vorrichtung (2) mindestens eine audio-phonische Einheit (18) umfasst. 20
3. System (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** die biometrische Erfassungseinheit (17) mindestens einen optischen Brechungssensor zur optischen Erfassung von biometrischen Daten umfasst. 25
4. System (1) nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** mindestens eine der ersten Erfassungseinheit (3) und der zweiten Erfassungseinheit (10) jeweils einen Beschleunigungserfassungssensor (4) und einen Neigungserfassungssensor (5) umfasst. 30
5. System (1) nach einem oder mehreren der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die erste Vorrichtung (2) mindestens eine erste Datenverarbeitungseinheit (12) umfasst, die operativ verbunden ist mit: 35
 - der ersten Erfassungseinheit (3) für den Empfang von kinematischen Daten, die zu verarbeiten sind, um das Auftreten eines Unfalls zu bestimmen; und
 - der ersten Sende-Empfangseinheit (6) für die Übertragung der verarbeiteten Daten. 40
6. System (1) nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die erste Vorrichtung (2) mindestens eine erste Datenverarbeitungseinheit (12) umfasst, die mit der biometrischen Erfassungseinheit (17) zum Empfang der biometrischen Daten operativ verbunden ist. 45
7. System (1) nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die zweite Datenverarbeitungseinheit (13) mit 50

der zweiten Sende-Empfangseinheit (9) operativ verbunden ist für den Empfang von Daten, die von der ersten Vorrichtung (2) kommen, und für die Übertragung von verarbeiteten Daten an die Fernsteuerungsstation (11).

8. System (1) nach Anspruch 2, **dadurch gekennzeichnet, dass** die Steuereinheit (19) mit der audio-phonischen Einheit (18) für die stimmliche Interaktion mit dem Benutzer (A) verbunden ist. 10
9. System (1) nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** mindestens eine der ersten Vorrichtung (2) und der zweiten Vorrichtung (7) mindestens eine Speichereinheit (14) umfasst, die geeignet ist, kinematische Daten, biometrische Daten, verarbeitete Daten und andere voreingestellte Daten zu speichern. 15
10. System (1) nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** mindestens eine der ersten Vorrichtung (2) und der zweiten Vorrichtung (7) mindestens eine Datenverbindungseinheit (15) umfasst, die geeignet ist, mit mindestens einer externen Peripherieeinheit (16) verbunden zu werden. 20 25
11. System (1) nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die erste Sende-Empfangseinheit (6) mindestens einen Wi-Fi-Sende-Empfänger umfasst. 30
12. System (1) nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die zweite Sende-Empfangseinheit (9) mindestens einen GSM/UMTS-Sende-Empfänger umfasst. 35
13. System (1) nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die erste Vorrichtung (2) Befestigungsmittel an einem Motorradfahrerhelm umfasst. 40
14. System (1) nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die zweite Vorrichtung (7) Befestigungsmittel an einem Motorrad umfasst. 45
15. System (1) nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** es Klassifizierungsmittel für die Schwere eines aufgetretenen Unfalls umfasst, die mit der ersten Datenverarbeitungseinheit (12) und mit der zweiten Datenverarbeitungseinheit (13) verbunden sind. 50 55

Revendications

1. Système (1) pour la signalisation et la gestion d'appels d'urgence pour des motocycles, comprenant :

- au moins un premier dispositif (2) électronique pouvant être associé à un utilisateur (A) d'un motocycle (B) et ayant

au moins une première unité de détection (3) de données cinématiques du mouvement de l'utilisateur (A),
une première unité d'émetteur-récepteur (6) d'ondes radio associée au moins à ladite première unité de détection (3) et adaptée pour recevoir/transmettre des données,
une unité de détection biométrique (17) adaptée pour détecter les données biométriques dudit utilisateur (A) ;

- au moins un second dispositif (7) électronique fixé à au moins une partie dudit motocycle (B), ayant

au moins une unité de localisation (8) pour localiser la position géographique dudit motocycle (B),

au moins une seconde unité d'émetteur-récepteur (9) d'ondes radio adaptée pour recevoir/transmettre des données,
une seconde unité de détection (10) de données cinématiques du mouvement dudit motocycle (B),

au moins une seconde unité de traitement de données (13) connectée fonctionnellement à ladite seconde unité de détection (10) pour la réception des données cinématiques pertinentes ; et

- au moins une station de commande distante (11), connectée fonctionnellement à au moins un parmi ledit premier dispositif (2) et ledit second dispositif (7) pour signaler et gérer des appels d'urgence ;

dans lequel ledit second dispositif (7) comprend au moins une unité de commande (19) connectée fonctionnellement à la seconde unité de traitement de données (13) pour la réception des données traitées de manière à déterminer la gravité de l'accident survenu, et dans lequel l'unité de commande (19) est adaptée pour commander la fonctionnalité de ladite unité de détection biométrique (17) conformément à la gravité de l'accident.

2. Système (1) selon la revendication 1, **caractérisé par le fait que** ledit premier dispositif (2) comprend au moins une unité audio-phonique (18).

3. Système (1) selon la revendication 1, **caractérisé par le fait que** ladite unité de détection biométrique (17) comprend au moins un capteur de réfraction optique pour la détection optique de données biométriques. 5
4. Système (1) selon une ou plusieurs des revendications précédentes, **caractérisé par le fait qu'**au moins une parmi ladite première unité de détection (3) et ladite seconde unité de détection (10) comprend, respectivement, un capteur de détection d'accélération (4) et un capteur de détection d'inclinaison (5). 10
5. Système (1) selon une ou plusieurs des revendications précédentes, **caractérisé par le fait que** ledit premier dispositif (2) comprend au moins une première unité de traitement de données (12) connectée fonctionnellement à : 15
 - ladite première unité de détection (3) pour la réception de données cinématiques devant être traitées pour déterminer la survenue d'un accident ; et
 - ladite première unité d'émetteur-récepteur (6) pour la transmission de données traitées. 20 25
6. Système (1) selon une ou plusieurs des revendications précédentes, **caractérisé par le fait que** ledit premier dispositif (2) comprend au moins une première unité de traitement de données (12) connectée fonctionnellement à ladite unité de détection biométrique (17) pour la réception desdites données biométriques. 30 35
7. Système (1) selon une ou plusieurs des revendications précédentes, **caractérisé par le fait que** ladite seconde unité de traitement de données (13) est connectée fonctionnellement à ladite seconde unité d'émetteur-récepteur (9) pour la réception de données provenant dudit premier dispositif (2) et pour la transmission de données traitées à ladite station de commande distante (11). 40
8. Système (1) selon la revendication 2, **caractérisé par le fait que** ladite unité de commande (19) est associée à ladite unité audio-phonique (18) pour l'interaction vocale avec ledit utilisateur (A). 45
9. Système (1) selon une ou plusieurs des revendications précédentes, **caractérisé par le fait qu'**au moins un parmi ledit premier dispositif (2) et ledit second dispositif (7) comprend au moins une unité de stockage (14) adaptée pour stocker des données cinématiques, des données biométriques, des données traitées et d'autres données prédéfinies. 50 55
10. Système (1) selon une ou plusieurs des revendications précédentes, **caractérisé par le fait qu'**au moins un parmi ledit premier dispositif (2) et ledit second dispositif (7) comprend au moins une unité de connexion de données (15) adaptée pour être connectée à au moins une unité périphérique externe (16).
11. Système (1) selon une ou plusieurs des revendications précédentes, **caractérisé par le fait que** ladite première unité d'émetteur-récepteur (6) comprend au moins un émetteur-récepteur Wi-Fi.
12. Système (1) selon une ou plusieurs des revendications précédentes, **caractérisé par le fait que** ladite seconde unité d'émetteur-récepteur (9) comprend au moins un émetteur-récepteur GSM/UMTS.
13. Système (1) selon une ou plusieurs des revendications précédentes, **caractérisé par le fait que** ledit premier dispositif (2) comprend des moyens de fixation à un casque de motocycliste.
14. Système (1) selon une ou plusieurs des revendications précédentes, **caractérisé par le fait que** ledit second dispositif (7) comprend des moyens de fixation à un motocycliste.
15. Système (1) selon une ou plusieurs des revendications précédentes, **caractérisé par le fait qu'**il comprend des moyens de classification de la gravité d'un accident survenu associés à ladite première unité de traitement de données (12) et à ladite seconde unité de traitement de données (13).

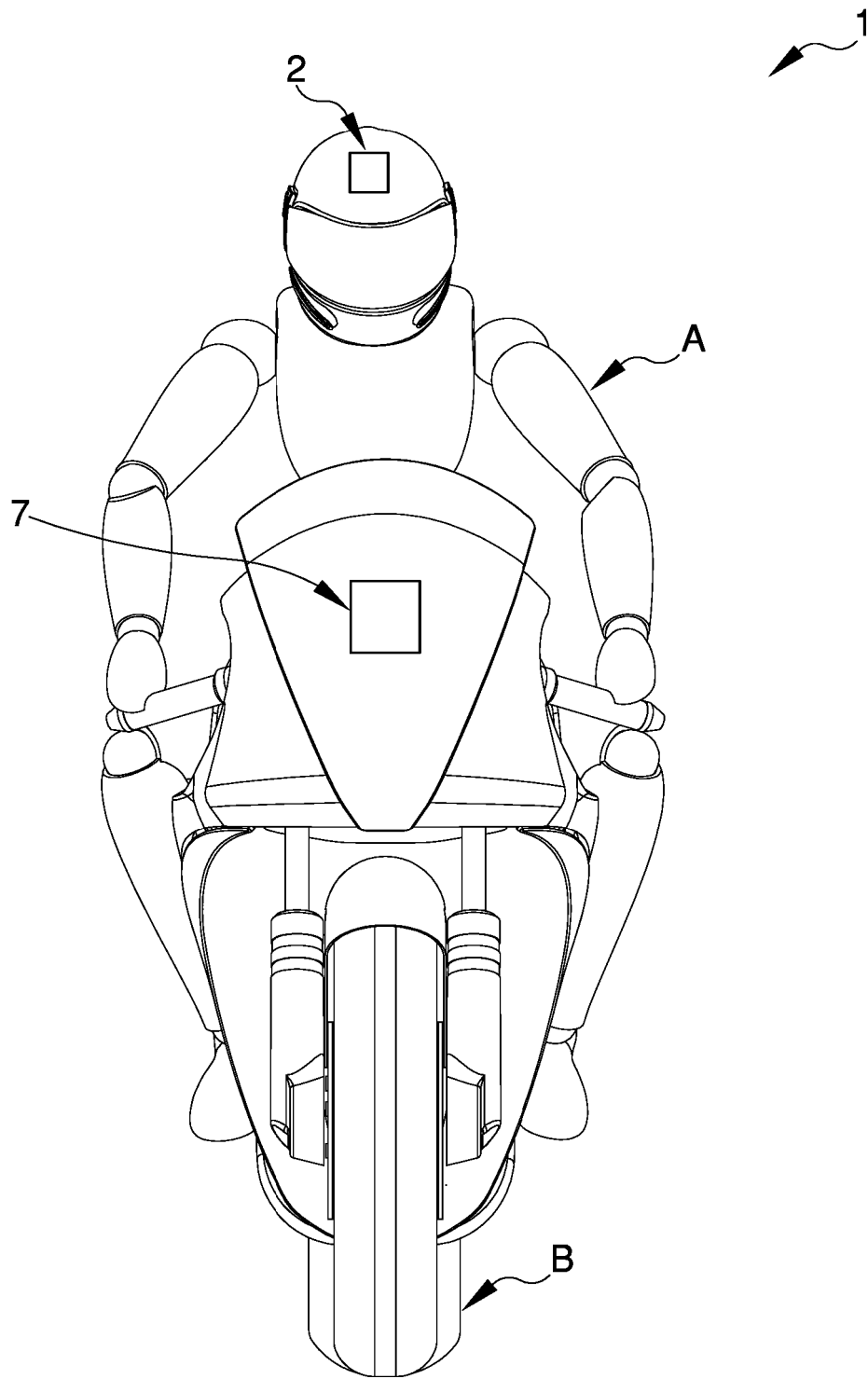


Fig.1

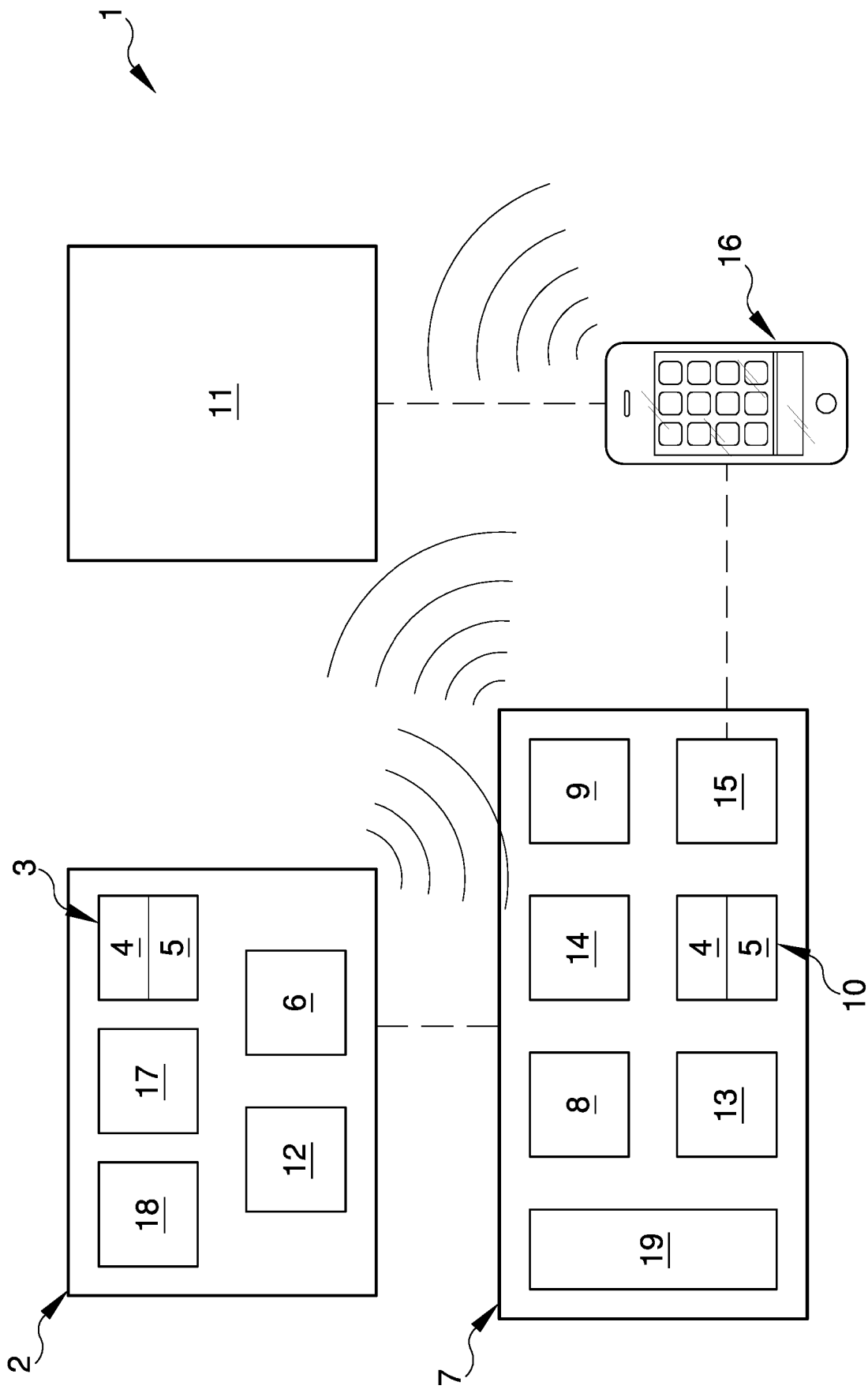


Fig.2

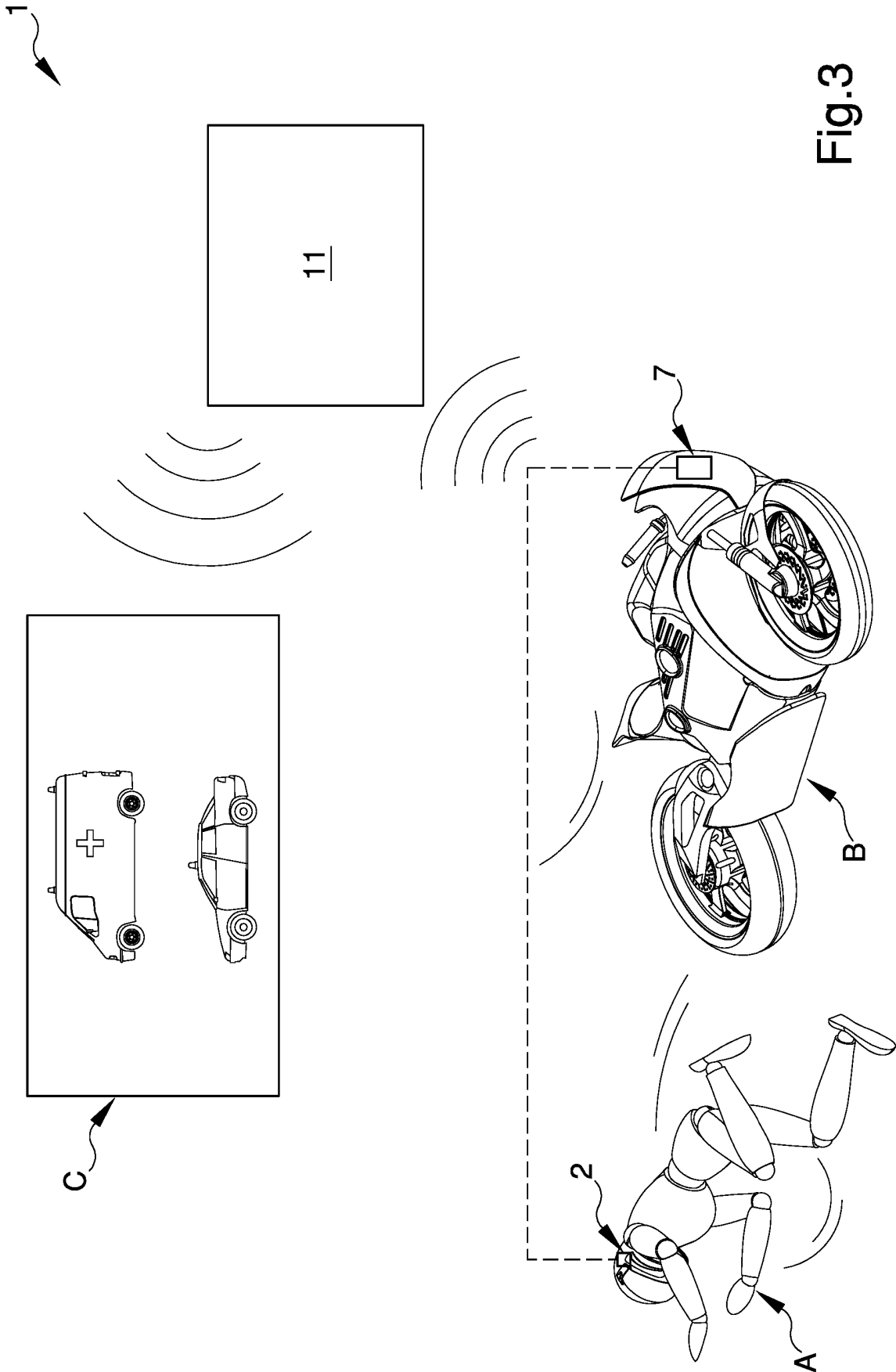


Fig.3

REFERENCES CITED IN THE DESCRIPTION

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