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(54) **Method for checking the arrival of a pigeon and identification element and data processing unit to be used therewith.**

(57) The invention relates to a method for checking the arrival of a pigeon after a pigeon race wherein an identification element is attached to the pigeons, which element is used for recording the arrival of the pigeons. Between the registration of the pigeons and their arrival, an ambient parameter such as the ambient temperature, is measured near the pigeon, stored in the identification element and read out after recording the arrival and compared to values measured for other participating pigeons. The invention also relates to an identification element to be used in this method and to a data processing unit for processing the data stored in the memory of this identification element.

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The invention relates to a method for checking the arrival of a pigeon which participates together with other pigeons in a pigeon race, wherein an identification element is attached to the pigeons during the registration, which identification element is used for recording the arrival of the pigeons.

During the registration of pigeons for pigeon races an elastic ring provided with an identification number is applied over the legs of these pigeons. As the pigeon arrives, it is removed from the pigeon by the pigeon flyer and it is placed in a pigeon timer to register the time of arrival.

The problem that arises herewith is that it is difficult to check whether the identification ring has been removed from the pigeon before the flight in an irregular manner and has been placed in the pigeon timer already before the arrival of the pigeon in order to register in this way an earlier time of arrival. When in practice a pigeon flyer is suspected of such irregularities, for a next pigeon race a checker is usually sent to this pigeon flyer in order to verify the times at which the pigeons actually arrive from the flight. Such a checker can however not be provided for each participating pigeon flyer and moreover it remains difficult to prove possible irregularities.

An object of the invention is therefore to provide a method for checking the arrival of a pigeon after a pigeon race which can be implemented easily on all participating pigeons and which allows to prove possible irregularities.

To this end a place dependent ambient parameter is measured near the pigeon at least during a determined period between the registration of the pigeons and their arrival, at least a part of the measured values of this ambient parameter are stored in the identification element of the pigeon, and after recording the arrival of the pigeon, the stored values are read out and compared to measured values stored in the identification element of other pigeons which participated in the race.

The values stored in the identification element are unique for each pigeon race and are substantially identical for all participating pigeons and especially for the pigeons which arrive in time. From the comparison between the measured values which have been stored in the different identification elements of the participating pigeons, it appears immediately whether a certain identification element has accompanied the pigeon during its flight or not. Indeed, in case the identification element has been removed from the pigeon before the flight, this identification element will register very anomalous values of the ambient parameter which is a clear evidence for proving such irregularities. It will be clear that in this manner it will be possible to check the arrival of each pigeon in a simple way.

In a preferred embodiment of the invention the ambient temperature is measured as ambient parameter. Indeed, the ambient temperature differs from place to place and offers moreover the advantage that it can be easily measured.

The invention relates also to an identification element for verifying the arrival of a pigeon, which element is provided for being attached to this pigeon when registering the latter for a pigeon race, and which is especially applicable in a method according to the invention, characterized in that it is provided with :

- measuring means for measuring at least one place dependent ambient parameter ;
- a memory ; and
- storing means for fetching at intervals a measured value of the ambient parameter and for storing it at least temporarily in the memory.

Even as the currently used rubber identification rings, the identification element according to the invention is destined to record the arrival of the pigeons. Moreover, it allows to check the arrival of these pigeons by comparing the values stored in the memory of different participating pigeons with each other. A deviation of the average values which is too big, is an incontestable proof that the respective identification element has been removed from the pigeon in an irregular way.

In a preferred embodiment of the identification element according to the invention, said measuring means comprise a temperature sensor.

Preferably, the identification element according to the invention comprises an emitter-receiver which is connected to the memory and which is provided for emitting the data stored in the memory when receiving an activating signal. This embodiment does not require any contact points on the identification element. Moreover, the data in the memory of this identification element can in no way be changed or manipulated from the outside, unless by the measurements of the place dependent ambient parameter itself.

The invention further relates to a data processing unit for processing the data stored in the memory of an identification element according to the invention, characterized in that it comprises means to read out said memory and means for further processing the read out data, such as for example for representing these data graphically and/or comparing the latter with data stored in identification elements of other participating pigeons. Other particularities and advantages of the invention

will become apparent from the following description of a method for checking the arrival of a pigeon and of an identification element and data processing unit to be used therewith according to the invention. This description is only given as an example and does not limit the scope of the inven-

tion. The reference numerals relate to the annexed drawings wherein :

Figure 1 shows a block diagram of an identification element according to the invention ; and

Figure 2 a block diagram of a data processing unit for processing the data stored in the memory of the identification element according to Figure 1.

In races with pigeons, before the flight, when registering the pigeons of putting them into baskets, an identification element is attached to each pigeon, for example a rubber ring with an identification number which is applied over the legs of the pigeons. In order to register the time of arrival or in other words to record the arrival of the pigeons, the pigeon flyer removes this identification element from the pigeon and places it as soon as possible after the arrival of the pigeon into its pigeon timer.

The invention provides now a method for checking the arrival of the pigeons and more particularly for checking whether the identification element has actually been carried by the pigeon during the flight. To this end, in the method according to the invention, a place dependent ambient parameter is measured near the pigeon at least during a determined period between the registration of the pigeon and its arrival, at least a part of the measured values of this ambient parameter are stored in the identification element of the pigeon and after recording the arrival of the pigeon, the stored values are read out and compared with measured values stored in the identification element of other pigeons which participated in the pigeon race.

As place dependent ambient parameter the ambient temperature is preferably measured. Although possibly other place dependent ambient parameters such as the air pressure, the air humidity, etc. or for example an artificially established ambient parameter, such as a magnetic field on the liberation place of the pigeons can be measured, the ambient temperature will be used in the further description a.o. since this is easy to be measured.

The ambient temperature is preferably measured at least from the registration of the pigeon to its arrival. According to the invention, it is not necessary to store continuously measurement results in the identification element. Since between the registration and the arrival of the pigeons there passes always several hours and for long distance flights even several days, it is sufficient to store the value of the ambient temperature in the identification element at intervals from 1 to 3 hours, for example at 2 hours intervals. In this way, the identification element has to be provided only with a relatively small memory capacity. The ambient temperature can be measured either continuously or with the same intervals, depending on the

means used for measuring the temperature.

The data stored in the identification element indicate the variation of the temperature during the pigeon race. This temperature variation is caused amongst others by the fact that the temperature is dependent from day to night, the transport, the altitude during the flight, the local weather circumstances, etc. It will therefore be clear that the variation of the temperature in function of the time is unique for each pigeon flight and that it is impossible to simulate this temperature variation.

By comparing the temperatures stored in the identification element of an arrived pigeon with temperatures stored in the identification elements of other arrived pigeons, it is possible to verify whether the identification element has accompanied the pigeon during the whole pigeon race and thus whether it has not been removed before the flight in a fraudulent way in order to register an earlier time of arrival. Normally, the temperatures stored by the different identification elements will differ only little one from another so that very anomalous temperatures prove that the identification element has been removed already before the flight.

In the method according to the invention, it is possible but not necessary to check the arrival of each participating pigeon. Usually, such checking is only important for the pigeons which arrived early and which come into the prices. In order to check the arrival of these pigeons, the stored temperatures are preferably compared with other pigeons of the same region which also arrived early and which consequently have followed during the flight substantially at the same time about the same course and which had to register therefore substantially the same temperatures.

Beside this method, the invention provides also an identification element for recording the arrival of a pigeon which allows moreover to check this arrival. Figure 1 shows a block diagram of such an identification element according to the invention. This identification element is provided with measuring means 1 for measuring at least one place dependent ambient parameter, a memory 2 and storing means 3 for fetching at intervals a measured value of the ambient parameter and for storing it at least temporarily in the memory 2.

The measuring means 2 comprise preferably a temperature sensor 4 which measures continuously the ambient temperature. The storing means fetch at intervals of for example 2 hours a measured value and store the latter each time in a memory place of the memory.

In the embodiment shown in Figure 1, the storing means 3 comprise a timer 5, an address generator 6 and an analogue to digital converter 7, for example a four-bit A/D converter. The timer 5 is

provided for sending for example each two hours a signal 8 to the address generator 6 which is raised thereby with one position and which gives a signal to the A/D converter to fetch a measured temperature and to store it in digital form on the indicated memory place in the memory 2. This continuous in this way until all memory places are filled, after which the oldest measurement is replaced by the most recent one which happens depending on the available memory capacity possibly even only after a few weeks. However, a memory capacity for one to two days is usually sufficient.

In order to allow the memory of the identification element to be read out, contact points connected to this memory 2 can be provided on the identification element. However, in the preferred embodiment according to Figure 1, the identification element comprises an emitter-receiver 9 which is connected to the memory 2 and which is provided for emitting the data stored in the memory 2 when receiving an activating signal.

The emitter part of the emitter-receiver 9 comprises a parallel to serial converter 10 which sends all the data stored in the memory 2, for example a RAM-memory, sequentially and serially to a modulator 11 where they are modulated on a signal from an oscillator 12, which signal is then sent by a control 13 to an antenna or coil 14. Then, this antenna 14 emits the data in the form of radio signals. However, in another embodiment, also optical or ultrasonic signals can be emitted and received.

The antenna 14 is also a component of the receiver part of the emitter-receiver. This receiver-part is provided for activating the emitter part when receiving an activating signal so that the latter emits the stored data. To this end, the receiver part comprises an activating signal detector 15 which detects the activating signal and sends this signal 16 to read out software 17 which activates the address generator 6 as well as the parallel to serial converter 10, so that the stored data are emitted. The memory 2 comprises possibly a ROM-part 18 wherein for example an identification number is stored which is also emitted when the activating signal is received.

The hereabove described electronic part of the identification element is preferably sealed hermetically. Its working cannot be influenced from the outside. This electronic part is realized in a manner which is known per se according to a low voltage / low power technology with statical properties in order to reduce the power consumption to a minimum. The whole is for example realized in one single semi-conductor chip which is supplied by an appropriate battery. Due to the minimal power consumption, amongst others since the chip is usually in a passive state, the chip can function auto-

mously even up to 3 years.

For attaching the identification element to a pigeon, this element for example formed by an elastic ring which can be applied over the leg of the pigeon and wherein the electronic part and the battery are provided. Instead of an elastic ring, a more rigid ring which can be snapped around the pigeon leg can also be used. It will be clear that possibly yet other attachment mechanisms are possible.

The invention provides further also a data processing unit for processing the data stored in the memory 2 of the identification element according to the invention. Generally, this data processing unit comprises means 19 to read out the memory 2 of the identification element and means 20 for further processing the read out data.

Figure 2 shows a block diagram of a special embodiment of such a data processing unit, the data processing means 20 of which are formed by a personal computer 20 which is connected to the read out means 19 through a communication gate 21, for example a RS232 communication gate. The communication gate 21 is connected to a microprocessor 22 of the read out means 19. The latter comprise an activating signal generator 23 which either by pressing a switch 24 or through a command of the personal computer, sends a pulse to a control 26 of an antenna 27 by means of a signal of an oscillator 25 in such a manner that this antenna emits the activating signal for the identification element.

The antenna 27 is further provided for receiving the data emitted by an identification element. To this end, the read out means 19 are for example provided with a cylindrical chamber wherein the identification element can be placed and which is surrounded by the antenna or coil 27. The received signal is amplified by a preamplifier 28 and then demodulated by means of a demodulator 29. The demodulated signal is then sent to an amplifier and detector 30 which sends the data to the microprocessor 22. The read out means 19 are further also provided with a RAM-memory 31 for storing the data temporarily and with a ROM-memory 32.

The read out means 19 shown in Figure 2 comprise thus an emitter-receiver which is, on the one hand, provided for emitting an activating signal and, on the other hand, for receiving the data emitted by the emitter-receiver of the identification element.

The means 20 for further processing the read out data, or in other words the personal computer 20, are provided for representing these data, preferably graphically, in function of the time, the variation of the place dependent ambient parameter, in this case the temperature variation, being calculated by interpolation. These means 20 are possi-

bly further also provided for comparing the data stored in several identification elements of pigeons which participate in the pigeon race. In this way, it is for example possible to calculate the deviation between the temperature data stored during a race and the average temperature variation which has been calculated on the basis of the temperature data of a number of identification elements, for example of the pigeon from a certain region which arrived earliest.

It will be clear that many modifications can be applied to the hereabove described embodiments amongst others with respect to the applied electronic diagrams without leaving the scope of the invention.

The receiver part of the identification element could for example be replaced by a microswitch which has to be pressed in mechanically in order that the emitter part would emit the stored data. In this case, the part of the read out means 19 for emitting the activating signal can be omitted.

Claims

1. A method for checking the arrival of a pigeon which participates together with other pigeons in a pigeon race, wherein an identification element is attached to the pigeon during the registration, which identification element is used for recording the arrival of the pigeons, characterized in that :
 - at least during a determined period between the registration of the pigeons and their arrival, a place dependent ambient parameter is measured near the pigeon,
 - at least a part of the measured values of this ambient parameter are stored in the identification element of the pigeon, and
 - after recording the arrival of the pigeon, the stored values are read out and compared to measured values stored in the identification element of other pigeons which participated in the race.
2. A method according to claim 1, characterized in that as ambient parameter the ambient temperature is measured.
3. A method according to claim 1 or 2, characterized in that said values of the ambient parameter are stored in the identification element of the pigeon at intervals, especially at 1 to 3 hours intervals.
4. A method according to any one of the claims 1 to 3, characterized in that at least from the registration of the pigeon until its arrival, said ambient parameter is measured and measured

values are stored in the identification element.

5. An identification element for recording the arrival of a pigeon, which element is provided for being attached to this pigeon when registering the latter, and which is especially applicable in a method according to anyone of the claims 1 to 4, characterized in that it is provided with :
 - measuring means (1) for measuring at least one place dependent ambient parameter ;
 - a memory (2) ; and
 - storing means (3) for fetching at intervals a measured value of the ambient parameter and for storing it at least temporarily in the memory (2).
6. An identification element according to claim 5, characterized in that said measuring means (1) comprise a temperature sensor (4).
7. An identification element according to claim 5 or 6, characterized in that said storing means (3) are provided for storing the fetched value each time in a memory location with the oldest stored value.
8. An identification element according to any one of the claims 5 to 7, characterized in that it comprises an emitter-receiver (9) which is connected to the memory (2) and which is provided for emitting the data stored in the memory (2) when receiving an activating signal.
9. A data processing unit for processing the data stored in the memory (2) of an identification element according to any one of the claims 5 to 8, characterized in that it comprises means (19) to read out said memory and means (20) for further processing the read out data.
10. A data processing unit according to claim 9, characterized in that it comprises an emitter-receiver provided for emitting said activating signal and for receiving the data emitted by the emitter-receiver of the identification element.
11. A data processing unit according to claim 9 or 10, characterized in that said means for further processing the read out data are provided for representing these data as a function of the time.
12. A data processing unit according to claim 9 or 10, characterized in that said means for further processing the read out data are provided for comparing the data stored in several identifica-

tion elements of pigeons which participate in the pigeon race with each other.

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Fig. 1.

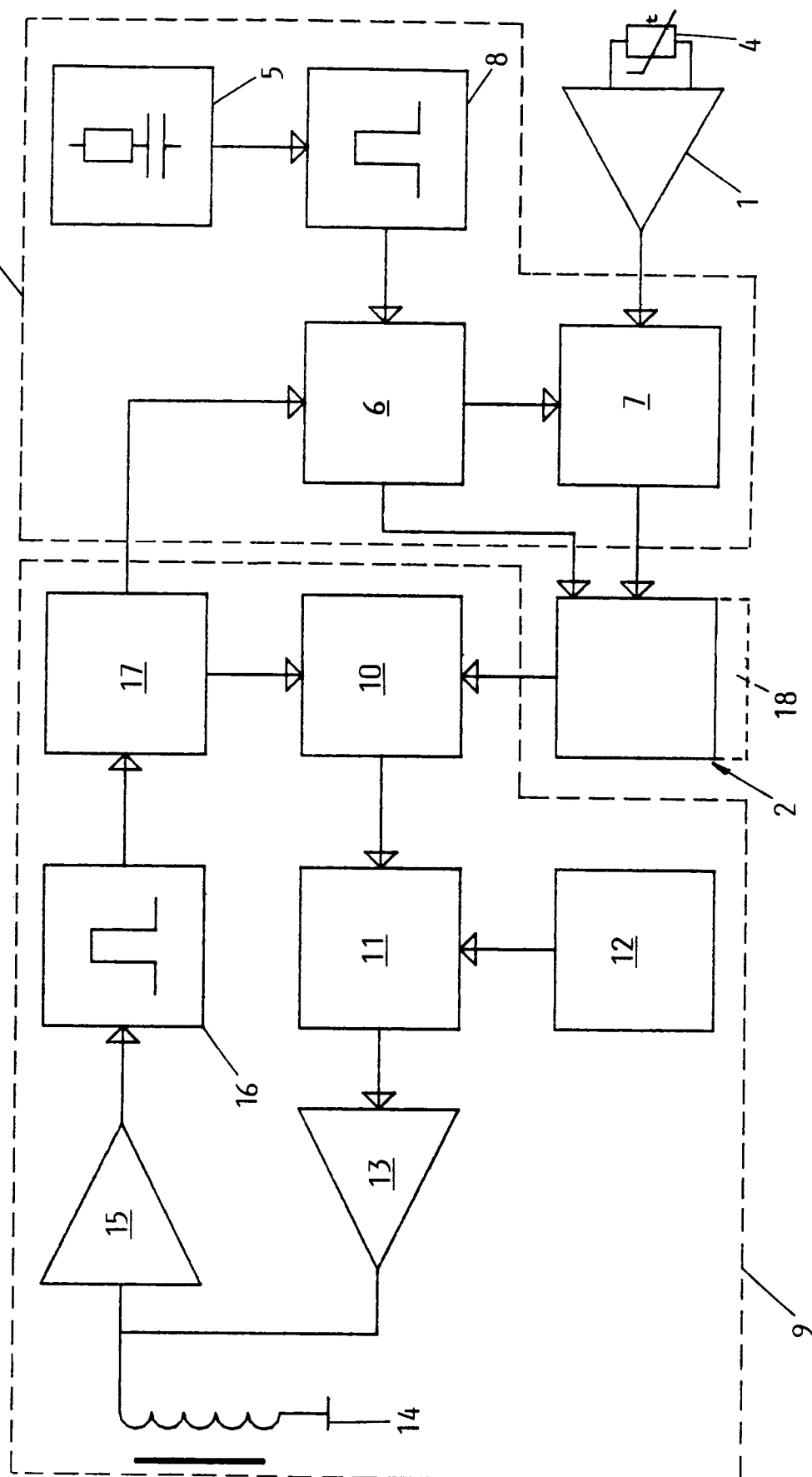
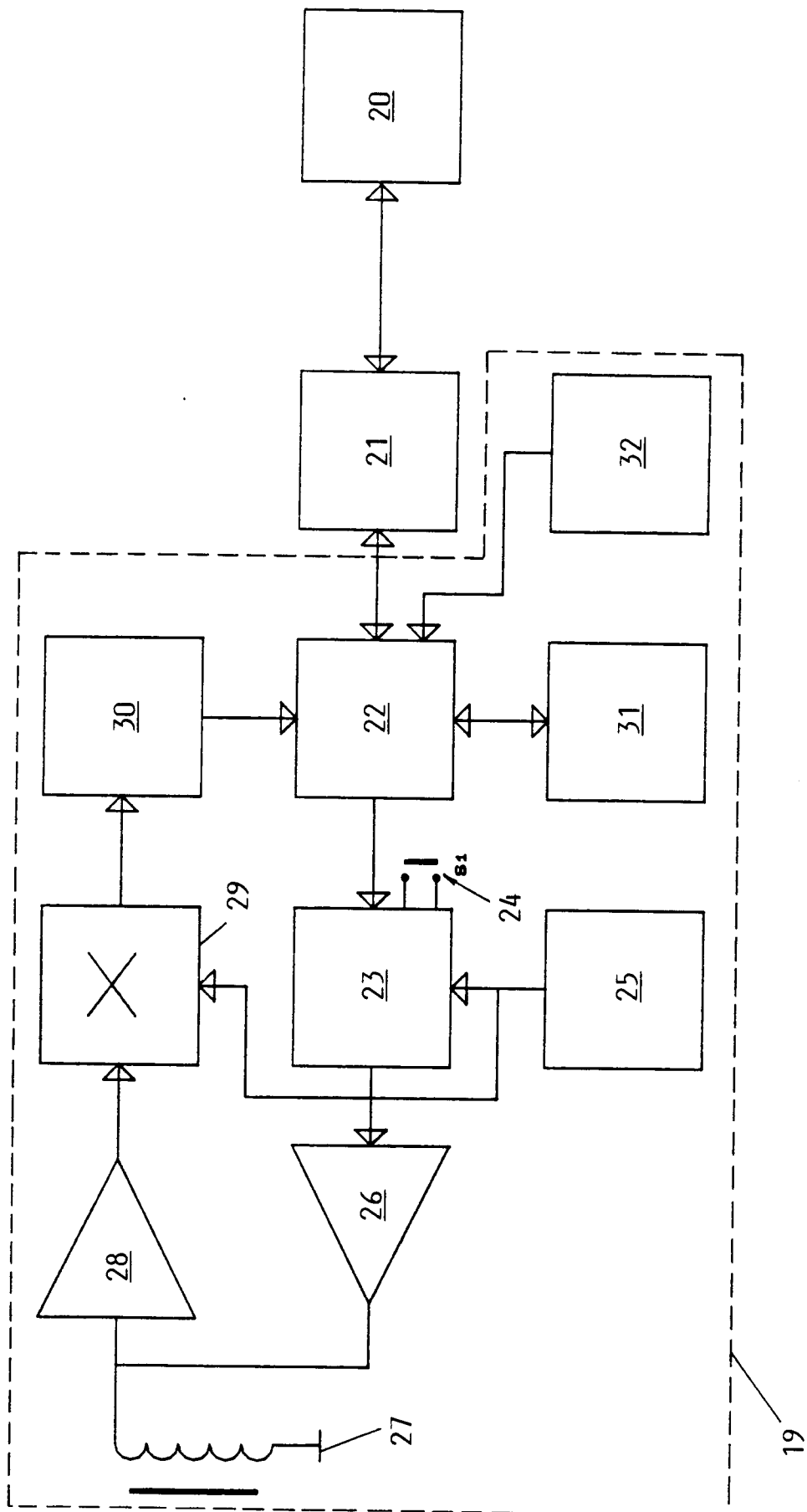


Fig. 2.





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EUROPEAN SEARCH REPORT

Application Number

EP 90 87 0235

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	DE-A-3632958 (HEIMES) * column 1, line 39 - column 2, line 64; figures *	1, 5	G07C1/26 G07C9/00
A	EP-A-0064787 (DE OUDE) -----		
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			G07C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 24 JULY 1991	Examiner MEYL D.
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 I : document cited for other reasons & : member of the same patent family, corresponding document			