



(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2002/0125991 A1**

**Levin**

(43) **Pub. Date: Sep. 12, 2002**

(54) **METHOD AND APPARATUS FOR SIMULTANEOUSLY DETERMINING A PATIENT'S IDENTIFICATION AND BLOOD OXYGEN SATURATION**

**Publication Classification**

(51) **Int. Cl.<sup>7</sup>** ..... **G06F 7/04**  
(52) **U.S. Cl.** ..... **340/5.8; 600/323; 600/333; 340/286.07**

(76) **Inventor: Paul D. Levin, Santa Cruz, CA (US)**

(57) **ABSTRACT**

Correspondence Address:  
**Bruce H. Johnsonbaugh**  
**Eckhoff & Hoppe**  
**Suite 3125**  
**333 Market Street**  
**San Francisco, CA 94105 (US)**

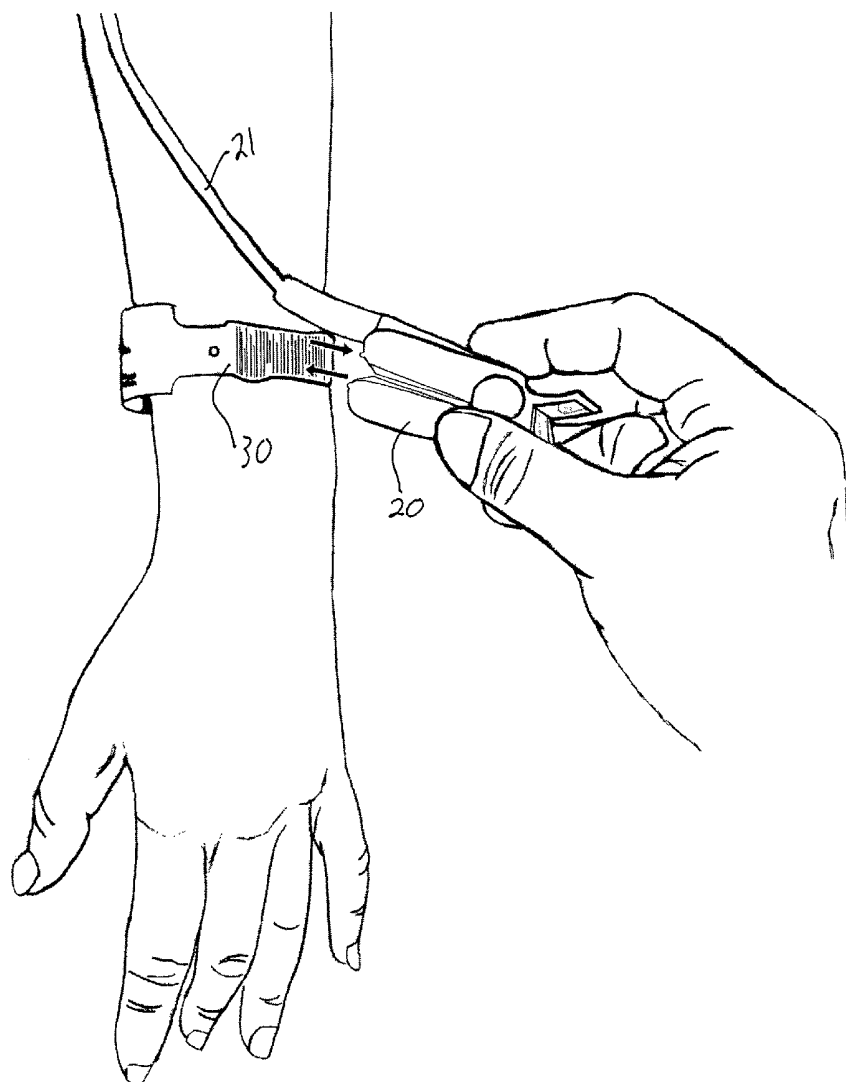
A method and apparatus for simultaneously determining a patient's identification and blood oxygen saturation are provided. An pulse oximeter probe carries a light source such as LEDs or lasers which is used to read patient identification information carried on the patient's wristband by a bar code. Alternately, the patient's wristband incorporates a radio frequency reader chip which contains the patient's identification information and the pulse oximeter probe carries an antenna adjacent its cable so that, when the pulse oximeter is turned on, it reads the chip in the wristband during the same motion with which the patient's oxygen blood saturation is measured with the pulse oximeter.

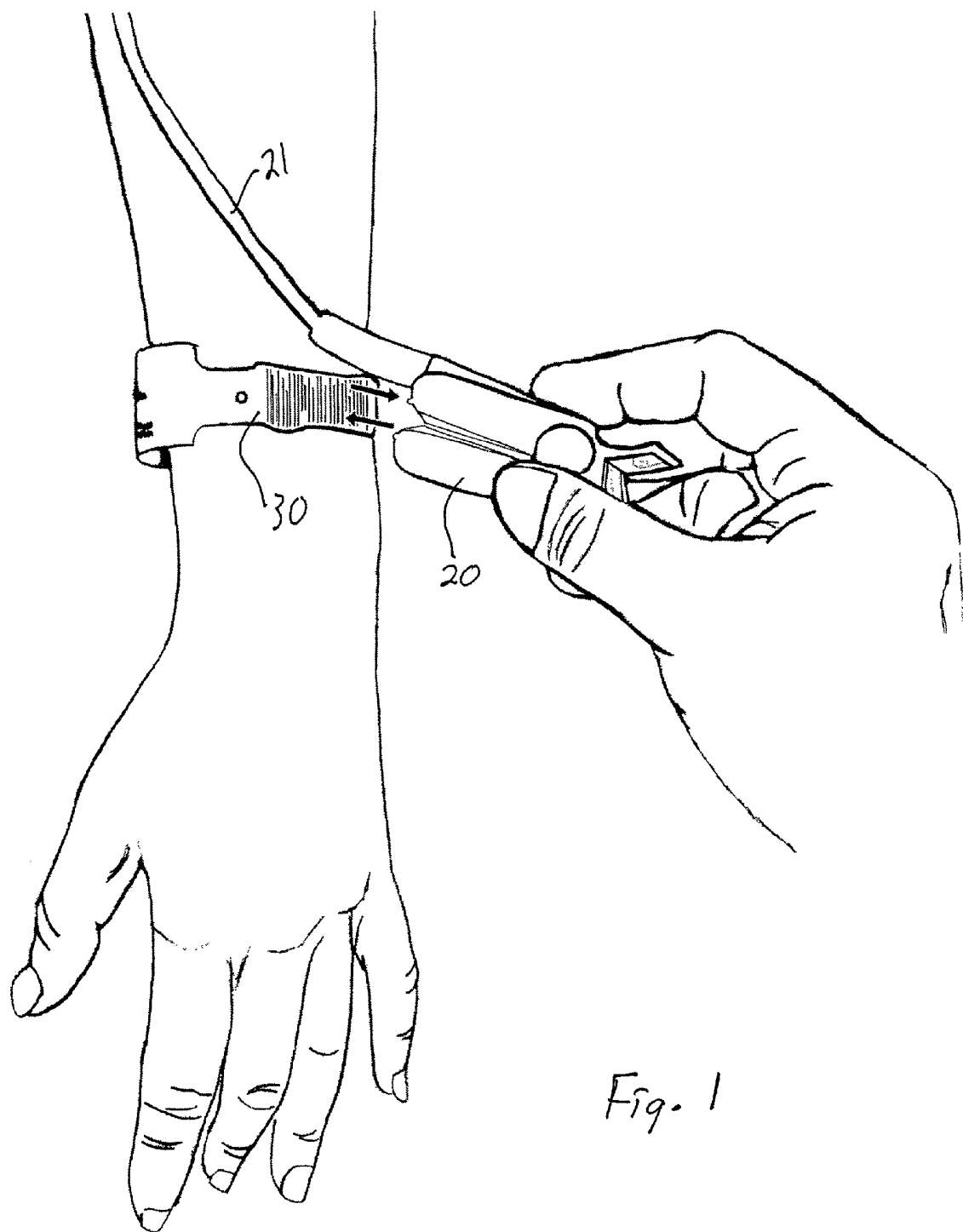
(21) **Appl. No.: 10/061,131**

(22) **Filed: Jan. 31, 2002**

**Related U.S. Application Data**

(60) **Provisional application No. 60/274,431, filed on Mar. 8, 2001.**





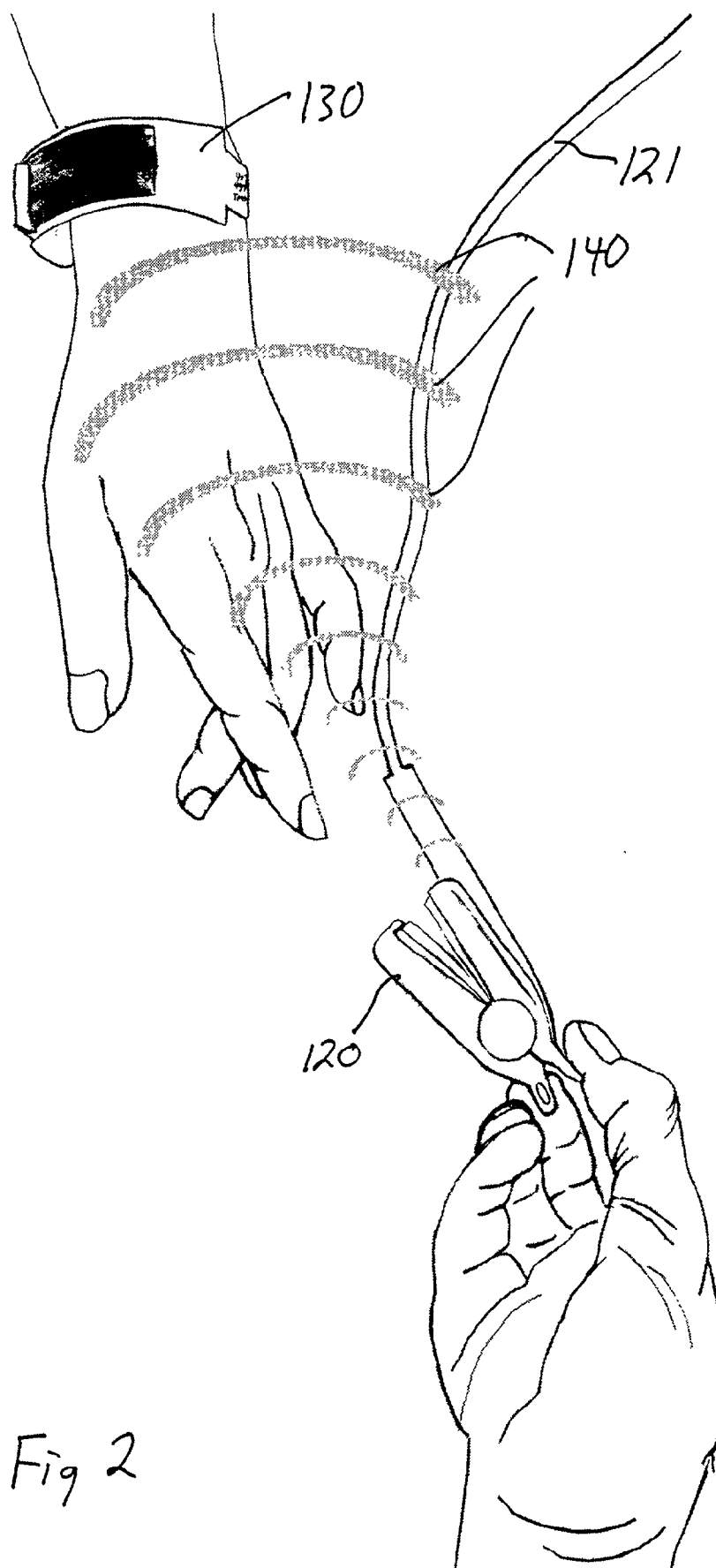


Fig 2

**METHOD AND APPARATUS FOR  
SIMULTANEOUSLY DETERMINING A PATIENT'S  
IDENTIFICATION AND BLOOD OXYGEN  
SATURATION**

CROSS-REFERENCE TO RELATED  
APPLICATION

[0001] This application claims the benefit of U.S. Provisional Application Serial No. 60/274,431 filed Mar. 8, 2001 entitled "Method and Apparatus for Identifying a Patient Using a Pulse Oximeter Probe."

BACKGROUND AND SUMMARY OF THE  
INVENTION

[0002] Pulse oximetry is now commonly employed along with non-invasive blood pressure, respiratory rate, and temperature in multi-parameter vital signs monitors. Such monitors are carried by hospital nursing staff from room to room for carrying out routine vital signs checks from four to six times per day. It is common practice for the nursing staff to carry a notebook and record manually various vital signs adjacent to the patient's name.

[0003] Since hospital patients invariably wear a wrist bracelet for identification, it would be most convenient to use the wristband to automatically record the patient's name and identification number each time that vital signs are taken. Wristbands with bar codes are not in common use at this time for patient identification, but interest is growing in the use of bar codes for this purpose. Since the pulse oximeter is invariably placed on a patient's finger to obtain oxygen saturation, it would be advantageous to use the same motion to cause the pulse oximeter probe to be used as a bar code reader.

[0004] The present invention provides an apparatus and method for simultaneously determining the patient's identification and blood oxygen saturation. The invention utilizes prior art pulse oximeters and prior art bar coded wristbands, for example. These individual prior art items have not heretofore been utilized together to automatically obtain and record the patient's identification together with blood oxygen saturation.

[0005] Reading the bar code on the wristband is accomplished by placing a combination emitter/detector in the distal end of the oximeter probe. Since the emitter/detector must pass directly over the bar code, this arrangement requires that the end of the pulse oximeter probe make direct contact with the patient's wristband. No deviation from the wristband is permitted when a simple LED bar coder is employed.

[0006] An alternative optical method, using a laser diode or a combination of laser diodes and detectors, enables the user to hold the bar code reader a few inches from the coded strip. The electronics for interpreting the reflected light is somewhat more complicated than with the simpler LED system, and the cost of the laser diodes and the complexity of the electronics makes this alternative method somewhat more costly to manufacture than simply employing an LED and a photodetector at the end of the pulse oximeter probe.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] **FIG. 1** is a perspective view showing a pulse oximeter probe carrying a fiber optic as it is used to read a bar code on a patient's wristband; and

[0008] **FIG. 2** is a perspective view of an alternate embodiment wherein the patient's wristband contains an RF chip which is read by an antenna carried by the pulse oximeter probe.

DETAILED DESCRIPTION OF THE DRAWINGS

[0009] **FIG. 1** illustrates a pulse oximeter probe **20** carrying a fiber optic, or LED's and a photodetector, so that a light beam can project to a bar coded wristband **30** and reflect back to the photodetector or fiber optic cable of the probe.

[0010] A somewhat different method of patient identification shown in **FIG. 2** employs a radio frequency (RF) antenna in the body of the pulse oximeter probe **120** with the major portion of the electronics within the external monitor (not shown). This includes the radio frequency generator, the interpretative electronics, and software. The wristband **130**, itself, rather than having a bar code, would then utilize a pre-programmed chip and an antenna which are embedded in the wristband. Signal strength from the antenna can be adjusted so that the range of the probe's signal generator is **8** inches or less, therefore avoiding spurious signals from any other patient but the patient of interest. As the pulse oximeter probe **120** is passed over the wrist to be placed on the fingertip for a pulse oximeter reading, a signal is generated shown by wave pattern **140** which, being in the vicinity of the embedded chip, picks up the identification signal from the wristband **130**, and the patient is thereby automatically identified by the patient monitor.

[0011] Once the patient is identified, his or her name and identification number may be displayed on the monitor. The patient data including blood oxygen saturation is automatically placed into the monitor's memory alongside the patient's name and identification number. Downloading to a computer can be done after taking a succession of patient vital signs, each group of vital signs conveniently tagged with the patient's identification number and name.

[0012] The advantage of using a pulse oximeter probe for patient identification is that it is invariably passed over the patient's wrist as the probe is moved toward the patient's finger. Therefore in essentially one motion, the nurse accomplishes both a pulse oximeter reading and patient identification.

[0013] Bar code readers are well known in the art and are available off the shelf in a form that can be easily modified and adapted to the present invention. An example is the Model WDR R11/12 made by Worth Data of Santa Cruz, Calif. For use with a pulse oximeter probe, a fiber optic cable connection **21** to the probe **20** enables the light source and detector to reside inside the external monitor (not shown) to which the pulse oximeter probe is connected by a cable. **FIG. 1** shows how light from the end of the pulse oximeter probe **20** can be directed at the patient's wristband and reflected back from the bar code area back to the fiber optic inside the probe. Alternately, LED's and a detector can be carried at the end of the pulse oximeter probe. The detected signal is then sent back to the monitor where it is processed to derive the patient's ID.

[0014] Another method of patient identification using a pulse oximeter probe is to use the probe in conjunction with a radio frequency patient ID system. In such a system, the

major portion of the electronics is within the external monitor and the radio signal is carried by a co-axial cable **121** to an antenna within the pulse oximeter probe. The complete read-write system is contained within the external monitor. Such a system can utilize a reader chip such as a Phillip HTR C110 which is designed for easy integration into an RF Identification System. The antenna for the read-write system is carried under the top surface of the oximeter probe **120** and may be composed of a grid of fine wires printed on flexible circuit board material. The RF signal easily penetrates the ABS plastic of the probe. The target of the RF signal is a patient's ID wristband such as described in U.S. Pat. No. 5,973,598 assigned to Precision Dynamics. This patent describes a programmable encoder circuitry formed on a flexible substrate with signal generating circuitry and antenna. All circuitry is printed on the flexible substrate with conductive ink. A similar identification tag is described in U.S. Pat. No. 5,914,862 assigned to Kasten Close Applied Research of Canada. **FIG. 2** shows this embodiment in which a co-axial cable conducts the RF signal to the antenna of the pulse oximeter probe, from which it is transmitted to the RF ID tag on the patient's wrist.

**[0015]** In summary, both embodiments of this invention allow a convenient method whereby a pulse oximeter probe can be used to identify a patient while employing the probe to simultaneously take blood oxygen saturation readings from the patient's finger. The patient ID can be displayed, stored within the monitor and later entered into the hospital's electronic record system.

**[0016]** The foregoing description of the invention has been presented for purposes of illustration and description and is not intended to be exhaustive or to limit the invention to the precise form disclosed. Modifications and variations are possible in light of the above teaching. The embodiments were chosen and described to best explain the principles of the invention and its practical application to thereby enable others skilled in the art to best use the invention in various embodiments and with various modifications suited to the particular use contemplated. The scope of the invention is to be defined by the following claims.

What is claimed is:

1. An apparatus for simultaneously determining a patient's identification and blood oxygen saturation comprising:

a pulse oximeter probe for placement onto a patient's finger,

a wristband with a bar code, said bar code containing the patient's identification, and

light means on said oximeter probe which can be directed onto said wristband to read said bar code.

2. An apparatus for simultaneously determining a patient's identification and blood oxygen saturation comprising:

a pulse oximeter probe adapted to be placed on a patient's finger,

a wristband with a radio frequency reader chip, said chip containing the patient's identification,

a coaxial cable within or adjacent to the cable to the pulse oximeter probe with an antenna from the coaxial cable located proximal to the probe, and

means for causing an RF signal to be sent from said antenna to said chip when said pulse oximeter is turned on.

3. A method of simultaneously determining a patient's identification and blood oxygen saturation comprising the steps:

placing a pulse oximeter probe on the patient's finger to determine blood oxygen saturation,

shining a laser or LED light beam onto a bar code located on a patient's wrist, and

reading the bar code and entering the patient's identification in a vital signs monitor.

4. A method of simultaneously determining a patient's identification and blood oxygen saturation comprising the steps:

placing a pulse oximeter probe on the patient's finger to determine blood oxygen saturation,

causing an RF signal to be sent from an antenna on or adjacent said pulse oximeter probe to an RF chip on the patient's wristband, said chip containing the patient's identification, and

reading the chip and entering the patient's identification in a vital signs monitor.

\* \* \* \* \*

专利名称(译)	用于同时确定患者的身份和血氧饱和度的方法和装置		
公开(公告)号	<a href="#">US20020125991A1</a>	公开(公告)日	2002-09-12
申请号	US10/061131	申请日	2002-01-31
[标]申请(专利权)人(译)	帕尔科LAB		
申请(专利权)人(译)	帕尔科LABS , INC.		
当前申请(专利权)人(译)	LEVIN PAUL D.		
[标]发明人	LEVIN PAUL D		
发明人	LEVIN, PAUL D.		
IPC分类号	A61B5/117 A61B5/00 G07C9/00 G06F7/04		
CPC分类号	A61B5/117 G07C9/00111 A61B5/14551 G07C9/28		
优先权	60/274431 2001-03-08 US		
其他公开文献	US6618602		
外部链接	<a href="#">Espacenet</a> <a href="#">USPTO</a>		

摘要(译)

提供了一种用于同时确定患者的身份和血氧饱和度的方法和装置。脉冲血氧计探针携带诸如LED或激光的光源，其用于通过条形码读取患者腕带上携带的患者识别信息。或者，患者的腕带包含射频读取器芯片，其中包含患者的识别信息，脉冲血氧计探头在其电缆附近携带天线，这样当脉搏血氧仪打开时，它会在同一动作中读取腕带中的芯片。用脉搏血氧仪测量患者的血氧饱和度。

