



(51) International Patent Classification:
A61B 8/00 (2006.01)

(21) International Application Number:
PCT/CN2016/096445

(22) International Filing Date:
23 August 2016 (23.08.2016)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
201520635748.9 24 August 2015 (24.08.2015) CN

(71) Applicant: **SONOSTAR TECHNOLOGIES CO., LIMITED** [CN/CN]; 504#, C Building, #27 Yayingshi Road, Science Town, Guangzhou, Guangdong 510530 (CN).

(72) Inventors: **CAI, Weizhong**; 504#, C Building, #27 Yayingshi Road, Science Town, Guangzhou, Guangdong (CN). **WANG, Jianfa**; 504#, C Building, #27 Yayingshi Road, Science Town, Guangzhou, Guangdong (CN). **LIANG, Chengming**; 504#, C Building, #27 Yayingshi Road, Science Town, Guangzhou, Guangdong (CN).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(54) Title: WIRELESS PROBE TYPE ULTRASOUND SCANNER MACHINE

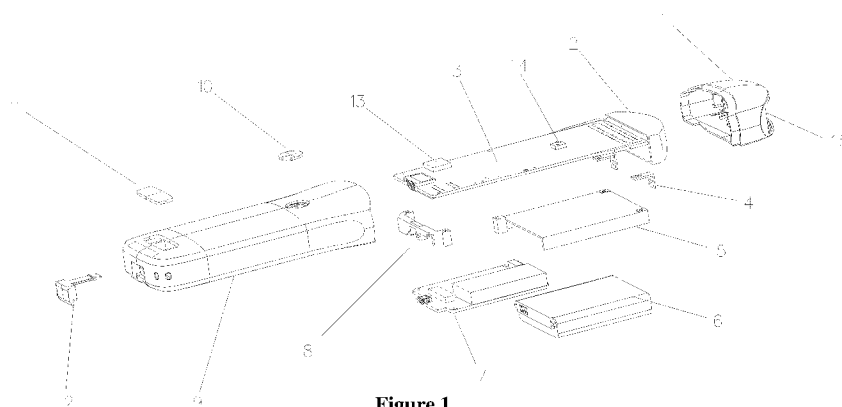


Figure 1

(57) Abstract: The utility model proposes a wireless probe type ultrasound scanner which comprises a housing, a housing cover, a transducer, a mainboard, a battery compartment, a battery and a backplane; the housing is matched and connected with the housing cover; the mainboard, the battery compartment, the battery and the backplane are arranged in a cavity body formed by the housing and the housing cover; the mainboard and the transducer are welded together; the mainboard is communicated with the transducer; the mainboard, the battery compartment, the backplane and the battery are laminated in order, wherein the battery is clamped on the battery compartment, a setting hole arranged on the end part of the transducer in a way of penetrating through the housing cover is clamped with the housing cover, and a Bluetooth and a power switch are arranged on the mainboard. The wireless probe type ultrasound scanner proposed by the utility model concentrates a host into a probe, greatly concentrates a structure and has powerful function, convenient use and low environmental requirement.



WIRELESS PROBE TYPE ULTRASOUND SCANNER MACHINE

Technical Field

The utility model relates to a small ultrasound diagnosis scanner, and more particularly to a wireless probe type ultrasound scanner.

Background

A traditional ultrasound machine is often composed of a host and a probe, resulting in large volume and inconvenient carrying; the use of the probe and the host connected with solid lines is also inconvenient; however, a hand-held ultrasound scanner is relatively light and small, and is realized through wired connection of a separated type probe, an externally connected power supply and the host. The separated type structure is relatively simple and is relatively simple and convenient in use, while line connection still brings inconvenience.

Summary

The utility model proposes a wireless probe type ultrasound scanner, concentrates a host into a probe, and has extremely simple structure, powerful function, convenient use and low environmental requirement.

To achieve the above technical solution, the utility model provides a wireless probe type ultrasound scanner which comprises

a housing, a housing cover, a transducer, a mainboard, a battery compartment, a battery and a backplane;

the housing is matched and connected with the housing cover, and the mainboard, the battery compartment, the battery and the backplane are arranged in a cavity body formed by the housing and the housing cover;

the mainboard and the transducer are welded together; the mainboard is communicated with the transducer; and the mainboard, the battery compartment, the

backplane and the battery are laminated in order, wherein the battery is clamped on the battery compartment,

a setting hole arranged on the end part of the transducer in a way of penetrating through the housing cover is clamped with the housing cover, and

a WiFi and a power switch are arranged on the mainboard.

the wireless probe type ultrasound scanner also comprises transducer fixing brackets; the transducer fixing brackets are connected between the battery compartment and the mainboard; a plurality of transducer fixing brackets are arranged; and any of the transducer fixing brackets presents an L shape.

the wireless probe type ultrasound scanner also comprises a circuit board fixing bracket; the end part of the circuit board fixing bracket penetrates through a plate fixing hole arranged in the housing; the circuit board fixing bracket is clamped with the plate fixing hole; and the circuit board fixing bracket is electrically connected with the battery and the mainboard respectively.

the circuit board fixing bracket is provided with an externally connected power charging interface.

the circuit board fixing bracket is provided with a wireless charging device.

the wireless probe type ultrasound scanner also comprises a charging interface rubber plug, and the charging interface rubber plug is arranged on the power interface.

a light-transparent hood and a switch key are also arranged on the housing; the switch key is arranged correspondingly to the power switch;

and the mainboard is also provided with a job state indicator lamp correspondingly to the light-transparent hood.

Compared with the prior art, the wireless probe type ultrasound scanner concentrates a host into a probe, and extremely concentrates a circuit and a structure, and has a built-in micro router to implement wifi connection communication of

devices with smart phones, tablet PCs and other intelligent terminals; the mobile phone and the tablet PCs display ultrasonic images and achieve powerful software function. The device is compact and has wireless connectivity, so it's convenient to use.

The wireless probe type ultrasound scanner provided by the utility model has simple structure and comprises an operating platform; the operating platform of the utility model is a platform based on visual carriers, such as mobile phones, PCs, computers, etc. having a wireless function, and is used with the utility model, wherein the utility model concentrates the host into the probe, and has the superior characteristics of simple structure, convenient operation, low cost, low environment building requirement, etc.

Description of the Drawings

To more clearly describe the technical solutions in the embodiments of the utility model or in the prior art, the drawings required to be used in the description of the embodiments or the prior art will be simply presented below. Apparently, the drawings in the following description are merely some embodiments of the utility model, and for those ordinary skilled in the art, other drawings can also be obtained according to the drawings without contributing creative labor.

Figure 1 is an exploded view of a wireless probe type ultrasound scanner provided by the utility model.

Detailed Description

The technical solutions in the embodiments of the utility model will be clearly and fully described below in combination with the drawings in the embodiments of the utility model. Apparently, the described embodiments are merely part of the embodiments of the utility model, not all of the embodiments. Based on the embodiments in the utility model, all other embodiments obtained by those ordinary

skilled in the art without contributing creative labor will belong to the protection scope of the utility model.

The wireless probe type ultrasound scanner provided by the utility model comprises a device of a wireless signal receiver, i.e., a "terminal" concentrating the host into the probe. The wireless probe type ultrasound scanner only has the device of the wireless signal receiver without transmitting capability, also comprises a device of receiving and transmitting hardware, and has a device for executing bidirectional communication of receiving and transmitting hardware on a bidirectional communication link. The device can comprise: a honeycomb or other communication devices, i.e., a honeycomb or other communication devices with a single-line display or multi-line display or without multi-line display; a personal communications service (PCS) which can combine voice, data processing, fax and/or data communication capability; a personal digital assistant (PDA) which can comprise a radio frequency receiver, a pager, an Internet/Intranet accessor and a network browser; and a conventional laptop and/or palm computer or other devices, i.e., a conventional laptop and/or palm computer or other devices having and/or comprising a radio frequency receiver. The "terminal" used herein is portable and transportable or is suitable and/or is configured for local operation, and/or is operated in other positions in a distribution form. The "terminal" used herein can also be communicated and networked, can be, for example, based on PDA and a mobile Internet device (MID) and /or have a mobile phone, and can also be connected with the devices of an intelligent television, etc. for use.

Those skilled in the art can understand that a remote terminal used herein can complete operation based on but not limited to an executable platform program of a cloud composed of a computer, a network host, a single network server, a set of a plurality of network servers or a plurality of servers. A connection network can realize communication through any communication mode, including but not limited to mobile communication based on 3GPP, LTE and WIMAX, computer network communication based on TCP/IP and UDP and a near field wireless transmission mode based on Bluetooth and infrared transmission standards.

As shown in Figure 1, a wireless probe type ultrasound scanner comprises a housing 9, a housing cover 1, a transducer 2, a mainboard 3, a battery compartment 5, a battery 6 and a backplane 7; the housing 9 is matched and connected with the housing cover 1; the mainboard 3, the battery compartment 5, the battery 6 and the backplane 7 are arranged in a cavity body formed by the housing 9 and the housing cover 1; the mainboard 3 and the transducer 2 are welded together; the mainboard 3 is communicated with the transducer 2; the mainboard 3, the battery compartment 5, the backplane 7 and the battery 6 are laminated in order, wherein the battery 6 is clamped on the battery compartment 5, a setting hole 15 arranged on the end part of the transducer 2 in a way of penetrating through the housing cover 1 is clamped with the housing cover 1, and a Bluetooth 13 and a power switch 14 are arranged on the mainboard 3.

The WIFI involved in the utility model is essentially a wireless connection mode; other wireless connection modes such as Bluetooth shall be regarded within the protection scope of the utility model and fall into the protection scope of the utility model. The operating platform (software part) corresponding to the terminal is disclosed on a network, and can be searched and downloaded through the network, and will not be repeated again.

The wireless probe type ultrasound scanner also comprises transducer fixing brackets 4; the transducer fixing brackets 4 are connected between the battery compartment 5 and the mainboard 3; a plurality of transducer fixing brackets 4 are arranged; and any of the transducer fixing brackets 4 presents an L shape.

The wireless probe type ultrasound scanner also comprises a circuit board fixing bracket 8; the end part of the circuit board fixing bracket 8 penetrates through a plate fixing hole arranged in the housing 9; the circuit board fixing bracket 8 is clamped with the plate fixing hole; and the circuit board fixing bracket 8 is electrically connected with the battery 6 and the mainboard 3 respectively.

The circuit board fixing bracket 8 is provided with an externally connected power charging interface.

The circuit board fixing bracket 8 is provided with a wireless charging device.

The wireless probe type ultrasound scanner also comprises a charging interface rubber plug 12, and the charging interface rubber plug 12 is arranged on the power interface.

A light-transparent hood 11 and a switch key 10 are also arranged on the housing; the switch key 10 is arranged correspondingly to the power switch 14, wherein after the power switch key finishes starting, the power switch key is switched into an image freezing/unfreezing function key; the light-transparent hood 11 is arranged correspondingly to the WIFI and used for displaying electric quantity and a WIFI signal state; and the mainboard is also provided with a job state indicator lamp correspondingly to the light-transparent hood 11.

The above is just preferred embodiments of the utility model and is not intended to limit the utility model. Any modification, equivalent replacement, improvement, etc. made within the spirit and the principle of the utility model shall be contained within the protection scope of the utility model.

1. A wireless probe type ultrasound scanner, which is characterized in that the probe type ultrasound scanner designs a host and a probe into a whole and comprises a housing, a housing cover, a transducer, a mainboard, a battery compartment, a battery and a backplane;

the housing is matched and connected with the housing cover, and the mainboard, the battery compartment, the battery and the backplane are arranged in a cavity body formed by the housing and the housing cover;

the mainboard and the transducer are welded together; the mainboard is communicated with the transducer; and the mainboard, the battery compartment, the backplane and the battery are laminated in order, wherein the battery is clamped on the battery compartment,

a setting hole arranged on the end part of the transducer in a way of penetrating through the housing cover is clamped with the housing cover, and

a WiFi and a power switch are arranged on the mainboard.

2. The wireless probe type ultrasound scanner according to claim 1, which is characterized in that:

the wireless probe type ultrasound scanner also comprises transducer fixing brackets; the transducer fixing brackets are connected between the battery compartment and the mainboard; a plurality of transducer fixing brackets are arranged; and any of the transducer fixing brackets presents an L shape.

3. The wireless probe type ultrasound scanner according to claim 1, which is characterized in that:

the wireless probe type ultrasound scanner also comprises a circuit board fixing bracket; the end part of the circuit board fixing bracket penetrates through a plate fixing hole arranged in the housing; the circuit board fixing bracket is clamped with

the plate fixing hole; and the circuit board fixing bracket is electrically connected with the battery and the mainboard respectively.

4. The wireless probe type ultrasound scanner according to claim 3, which is characterized in that:

the circuit board fixing bracket is provided with an externally connected power charging interface.

5. The wireless probe type ultrasound scanner according to claim 3, which is characterized in that:

the circuit board fixing bracket is provided with a wireless charging device.

6. The wireless probe type ultrasound scanner according to claim 3, which is characterized in that:

the wireless probe type ultrasound scanner also comprises a charging interface rubber plug, and the charging interface rubber plug is arranged on the power interface.

7. The wireless probe type ultrasound scanner according to claim 1, which is characterized in that:

a light-transparent hood and a switch key are also arranged on the housing; the switch key is arranged correspondingly to the power switch; and

the mainboard is also provided with a job state indicator lamp correspondingly to the light-transparent hood.

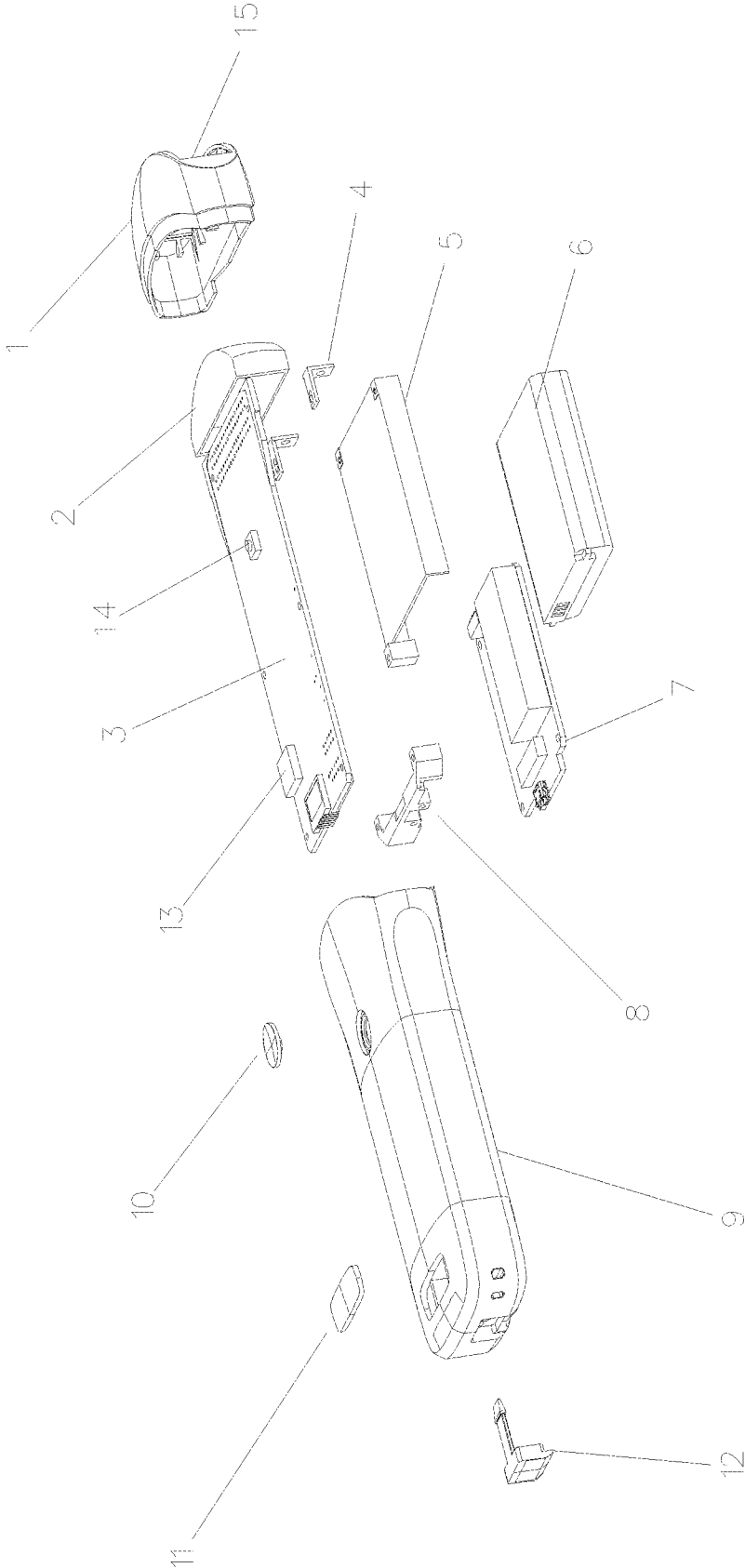


Figure 1

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2016/096445

A. CLASSIFICATION OF SUBJECT MATTER

A61B 8/00(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61B; G01S; G01N; H04W; H04B; H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNPAT, WPI, EPODOC, CNKI: ultrasonic, supersonic, ultrasound, portable, backpack, hand, handset, hand-hold, integra+, converg+, probe, wireless, radio, blue, tooth, WIFI, WI-FI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 204945377 U (GUANGZHOU SONOSTAR TECHNOLOGIES CO., LTD.) 06 January 2016 (2016-01-06) description, paragraphs [0024]-[0032]	1-7
X	CN 104814766 A (WUXI HISKY MEDICAL TECHNOLOGIES CO., LTD.) 05 August 2015 (2015-08-05) description, paragraphs [0023]-[0024], [0031]-[0034]	1-7
X	CN 202776364 U (CHENGDU VIGOROUS SCIENCE & TECHNOLOGY CO., LTD.) 13 March 2013 (2013-03-13) description, paragraphs [0019]-[0025]	1-7
X	CN 104655721 A (LI, XIAOWEI) 27 May 2015 (2015-05-27) description, paragraphs [0012]-[0018]	1-7
A	US 2011061466 A1 (FUJIFILM CORP.) 17 March 2011 (2011-03-17) the whole document	1-7

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

27 October 2016

Date of mailing of the international search report

14 November 2016

Name and mailing address of the ISA/CN

STATE INTELLECTUAL PROPERTY OFFICE OF THE
P.R.CHINA
6, Xitucheng Rd., Jimen Bridge, Haidian District, Beijing
100088
China

Facsimile No. (86-10)62019451

Authorized officer

GUO,Haibo

Telephone No. (86-10)61648258

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2016/096445

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
CN	204945377	U	06 January 2016	None			
CN	104814766	A	05 August 2015	None			
CN	202776364	U	13 March 2013	None			
CN	104655721	A	27 May 2015	None			
US	2011061466	A1	17 March 2011	JP	2011056104	A	24 March 2011

专利名称(译)	无线探头式超声扫描仪机		
公开(公告)号	EP3340886A4	公开(公告)日	2019-06-26
申请号	EP2016838560	申请日	2016-08-23
[标]申请(专利权)人(译)	索诺星科技有限公司		
申请(专利权)人(译)	索诺星科技有限公司		
当前申请(专利权)人(译)	索诺星科技有限公司		
[标]发明人	CAI WEIZHONG WANG JIANFA LIANG CHENGMING		
发明人	CAI, WEIZHONG WANG, JIANFA LIANG, CHENGMING		
IPC分类号	A61B8/00		
CPC分类号	A61B8/4472 A61B8/4427 A61B8/4455 A61B8/56 A61B2560/04		
优先权	201520635748.9 2015-08-24 CN		
其他公开文献	EP3340886A1		
外部链接	Espacenet		

摘要(译)

本发明提出一种无线探头式超声波扫描仪，包括壳体，壳体盖，换能器，主板，电池盒，电池和背板。壳体与壳体盖相匹配并连接；主板，电池盒，电池和背板设置在由壳体和壳体盖形成的腔体内；主板和传感器焊接在一起；主板与换能器通信；按顺序层叠主板，电池盒，背板和电池，其中电池夹在电池盒上，以穿透壳体盖的方式设置在换能器端部的安装孔夹紧主板上设有外壳盖，蓝牙和电源开关。