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(72) Inventor: **BOSH SOLER, Narcis**
E-17190 Salt Girona (ES)

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(74) Representative: **Evens, Paul Jonathan et al**
Maguire Boss
24 East Street
St. Ives
Cambridgeshire PE27 5PD (GB)

(71) Applicant: **E-Process Consulting and Management 2013, S.L.**
08019 Barcelona (ES)

(54) **DEVICE FOR FEMALE SEXUAL STIMULATION**

(57) The invention relates to a device for female sexual stimulation which includes a hollow phallus-shaped body housing a plurality of vibrating motors on the inside

thereof, intended for stimulating the erogenous zones of a vagina.

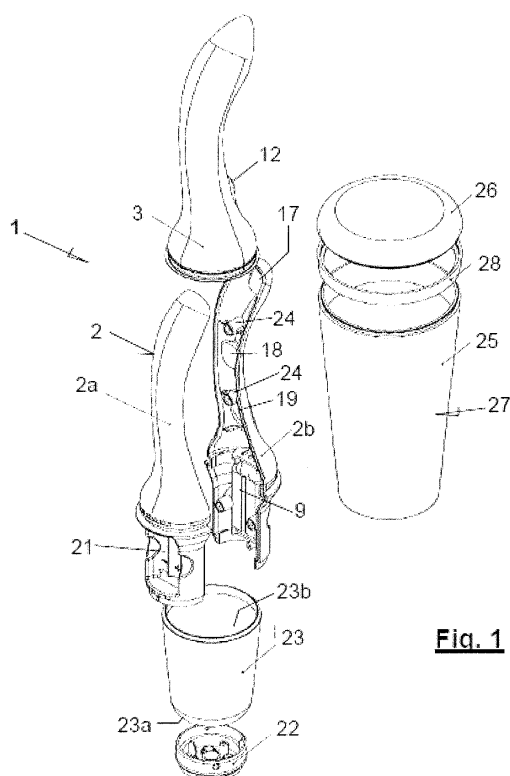


Fig. 1

Description

Technical Field of the Invention

[0001] The invention relates to a device for female sexual stimulation, of the type comprising a phallic-shaped hollow body and internally housing a plurality of vibrating motors for the purpose of stimulating the erogenous zones of the vagina.

Background of the Invention

[0002] Patent document EP 2308446 A1 discloses a device with a phallic portion housing at least two separately controllable vibrator assemblies.

[0003] The phallic portion is covered by a sleeve made of an impermeable elastic material as it is primarily intended for being inserted in a woman's vagina. In one embodiment, this phallic portion comprises a lateral extension that is optimal for stimulating a human clitoris.

[0004] The device comprises a processor and means for housing a battery or the like. The processor is configured for operating the vibrator assemblies in different combination modes preprogrammed in the processor, which can be selected using switches provided in the device. In one variant, the device comprises four superimposed vibrator assemblies in the main portion of the phallus and another vibrator assembly located in the aforementioned lateral extension. According to this variant, the processor is configured for controlling the vibrator assemblies according to ten different operating modes.

[0005] A first objective of the invention is an alternative device which, in addition to improving user interaction capacity, also offers better stimulation capacity.

[0006] Another objective of the present invention is a shape having a simple construction which contemplates the possibility of incorporating mechanical means or other types of means in the device without requiring fixing or support elements for these means, such as screws and the like, which may cause possible adjustments with use of the device in addition to also affecting the assembly and manufacturing cost.

Description of the Invention

[0007] The device according to the invention comprises an elongated hollow body housing power-driven vibrating means, and an impermeable outer sleeve made of a flexible material at least partially covering the mentioned hollow body and generally being phallus-shaped.

[0008] The device is essentially characterized in that it further comprises at least one transducer element which, covered by the sleeve, converts the effect of a physical cause affecting an associated portion of the sleeve into an electrical signal, and in that the device comprises a processor controlling the operation of the power-driven vibrating means according to the value of

said electrical signal.

[0009] The invention contemplates that the physical cause converted by the transducer elements is any one of pressure, force, temperature or moisture, or a combination thereof if the device comprises more than one transducer element, affecting the corresponding associated portion of the sleeve.

[0010] According to another feature of the invention, each transducer element is supported in the hollow body, which comprises a corresponding opening through which the sensitive part of the transducer element can be accessed. According to this feature, where the associated portion of the sleeve is what covers the mentioned opening, it is further provided that said associated portion of the sleeve physically contacts the sensitive part of the transducer element or is deformable until physically contacting the sensitive part of the mentioned transducer element.

[0011] In each portion of the sleeve associated with a transducer element, the sleeve is preferably internally provided with at least one projection or protuberance projecting inwardly, intended for exerting pressure against the sensitive part of the corresponding transducer element and for transmitting to it the inward deformation that the sleeve sustains in said portions.

[0012] According to another feature of the invention, the power-driven vibrating means comprise at least two electric motors and there are three transducers, the processor being configured for controlling the operation of the power-driven vibrating means according to an operating mode according to which the operation or the operating conditions of a first electric motor are determined by the signal generated by a first transducer element, and the operation or the operating conditions of the second electric motor are determined by the signal generated by the second and third transducer elements.

[0013] In one embodiment, the hollow body is divided according to an essentially longitudinal cut determining two mutually coupleable halves between which the power-driven vibrating means are arranged and held under pressure.

[0014] According to a preferred variant, at least one of the halves of the hollow body is provided with at least one opening for accessing the sensitive part of a corresponding transducer element which is supported in a shaped tab in said half of the hollow body which projects immediately below the mentioned opening.

[0015] According to another aspect of the device, in one embodiment, the hollow body comprises support means for the processor and means for housing at least one battery electrically connected to the processor, to the power-driven vibrating means and to the transducer element or elements, the device further comprising a series of switches for selecting one from among several operating modes controlled by the processor.

[0016] It is also contemplated that the device comprises means for setting up wireless communication with another apparatus such that in one operating mode, the

operating conditions of the power-driven vibrating means are determined by the information transmitted to them from this other apparatus.

[0017] According to another feature, the power-driven vibrating means comprise at least two electric motors the rotating shafts of which are oriented according to the longitudinal direction in which the hollow body extends, such that in at least one operating mode of the device the direction of rotation of the shafts of the electric motors is the opposite direction.

[0018] According to another feature, the means for housing at least one battery and the processor are arranged in the base of the hollow body, protected by a tubular cap axially coupleable to the mentioned hollow body through the end opening of which, opposite the coupling opening for coupling with the hollow body, the switches can be accessed such that they are easily accessible with the thumb of the same hand with which the user can grip the device.

Brief Description of the Drawings

[0019]

Figure 1 is an exploded view of a variant of the device according to the invention;

Figure 2 is a longitudinal section view of the device of Figure 1 with its components duly assembled; and Figure 3 is a front view of one of the halves forming the hollow body of the device illustrated in Figure 2, specifically that part with openings so that the sensitive part of the transducers can perceive the effect of the physical causes affecting the portion of the sleeve covering said openings.

Detailed Description of a Variant of the Invention

[0020] The device 1 depicted by way of example in the drawings constructively comprises two main components: a hollow body 2 formed by two plastic molded halves 2a and 2b coupleable to one another, and a sleeve 3 made of a flexible material, such as latex or silicone, covering a phallic-shaped main portion of the mentioned hollow body 2.

[0021] Figure 1 shows that the two halves 2a and 2b comprise known mutual coupling means 24 which allow attachment thereof by means of screws or the like. More specifically, half 2b is provided with a pair of hollow cylinders with an inner thread intended for receiving by screwing respective clamping screws going through the other half 2a through corresponding holes provided for that purpose in said half 2a of the hollow body 2.

[0022] The inner faces of the two halves 2a and 2b are further provided with several ribs, projections or the like which form, when the two halves 2a and 2b are juxtaposed, respective housings in which power-driven vibrating means 16 are fitted, said means being formed by first and second electric motors 7 and 8 which are fitted be-

tween these two halves 2a and 2b of the hollow body 2 when such halves are duly coupled to one another, as shown in Figure 2.

[0023] It can be seen in Figure 1, and in greater detail in Figure 3, that half 2b of the hollow body 2 is provided with three openings 13, 14 and 15 below which said half 2b is provided with corresponding shaped tabs 17, 18 and 19 which serve to support respective transducer elements 4, 5 and 6.

[0024] These transducer elements 4, 5 and 6 convert the effect of a physical cause affecting the portions 10, 11, 12, respectively, of the sleeve 3 covering the openings 13, 14 and 15, into an electrical signal. Said physical causes can be any one of pressure, force, temperature or moisture, or a combination thereof, affecting the aforementioned portions 10, 11 and 12.

[0025] As will be explained in greater detail below, the device 1 further comprises a processor 9 capable of controlling the operation of the power-driven vibrating means 16 according to the value of the electrical signals generated by the transducers 4, 5 and 6 according to different operating modes.

[0026] So that the transducer elements 4, 5 and 6 can capture the physical causes affecting the sleeve 3, specifically the portions of the sleeve 3 covering these transducer elements, to a greater extent, it is observed that in a preferred embodiment illustrated in Figure 2, the portions 10, 11 and 12 of the sleeve 3 physically contact the sensitive parts of the associated transducer elements 4, 5 and 6.

[0027] In the embodiment, the transducer elements 4, 5 and 6 are force sensors and each portion 10, 11, 12 of the sleeve 3 associated with a transducer element is internally provided with projections or protuberances 10a, 11a, 12a projecting inwardly to transmit to the sensitive part of the force sensors the inward deformation or thrust these portions of the sleeve 3 sustain.

[0028] At the base, each half 2a and 2b of the hollow body 2 comprises a shaped extension, such extensions being complementary to one another and form, when the two halves 2a and 2b are attached, support means 20 for the processor 9 and means for housing at least one battery 21 electrically connected to the processor 9, to the power-driven vibrating means 16 and to the transducer element or elements 4, 5, 6. To perform their technical function, these shaped extensions are naturally provided in a known manner with connectors, wiring and other conventional electrical components for housing standard commercial batteries and for the connection thereof with the remaining electrically powered components of the device 1.

[0029] It is seen in Figure 2 that the hollow body 2 is provided, in its linking portion between the phallic-shaped part and its shaped extension intended for housing the processor 9 and the power means, an annular channel 30 in which an annular inner shoulder 29 molded in the sleeve 3, adjacent to its mouth, is tightly inserted.

[0030] The means for housing at least one battery 21

and the processor 9 are protected by a tubular cap 23 axially coupleable to the mentioned hollow body 2. This tubular cap 23 is provided with a coupling opening 23b sized for being coupled under pressure and outside the mouth of the sleeve 3, in turn coupled to the hollow body 2 to thus assure leaktightness of the compartments housing sensitive components of the device 1.

[0031] At the opposite end, the tubular cap 23 is provided with an end opening 23a through which a panel with a series of switches 22 can be accessed for selecting one from among several operating modes controlled by the processor 9.

[0032] This panel with switches 22 is introduced in the tubular cap 23 through the coupling opening 23b and is sized so that it cannot be extracted from the tubular cap 23 through the end opening 23a. According to one embodiment, in the correct coupling position of the tubular cap 23, the panel with the switches 22 is subjected to pressure by the shaped extension in the hollow body 2, establishing electrical contact.

[0033] It is noted that the arrangement of the switches 22 is such that they are easily accessible with the thumb of the same hand with which the user can grip the device 1.

[0034] With respect to the operation of the device 1, the processor 9 is configured for allowing an operating mode of the device 1 according to which the operation or the operating conditions of the electric motor 7 are determined by the signal generated by the first transducer element 4, arranged at the distal end of the phallic-shaped portion of the hollow body 2; whereas the operation or the operating conditions of the second electric motor 8 are determined by the signal generated by the second and third transducer elements 5 and 6. According to this operating mode, it is contemplated, for example, that each transducer element is responsible for 50% of the maximum operating conditions of the electric motor 8. With this being the case, in the embodiment variant of the device 1, the maximum operating conditions of the motor 8 would only be reached if both force sensors forming the transducer elements 5 and 6 capture a maximum level of force simultaneously exerted in associated portions 11 and 12 of the sleeve 3.

[0035] Again in reference to the specific embodiment described, it must be noted that the portion 12 of the sleeve 3 is raised with respect to the remaining outer surface of the sleeve 3. This feature, together with its specific location, promotes optimal stimulation of the clitoris when the phallic-shaped portion of the hollow body 2 is introduced in a human vagina.

[0036] Providing device 1 with means for setting up wireless communication with another apparatus is also contemplated such that in one operating mode, the operating conditions of the power-driven vibrating means 16 are determined by the information transmitted to them from this other apparatus, which can be a PC or an erotic toy with similar features, for example.

[0037] The inventors have further resolved that by ar-

ranging the rotating shafts 7a and 8a of the motors 7 and 8 essentially oriented according to the longitudinal direction in which the hollow body 2 extends, applying an opposite direction of rotation to these rotating shafts causes a vibration augmenting effect, increasing the performance and stimulation capacity of the device 1.

[0038] Finally, complementing the device 1 with a protective container 27 comprising in the embodiment a tubular body 25 closed at one end by means of a cover 26 with a decorative ring 28, has been envisaged.

Claims

1. A device (1) for female sexual stimulation, comprising an elongated hollow body (2) housing power-driven vibrating means (16), and an impermeable outer sleeve (3) made of a flexible material, at least partially covering the mentioned hollow body and generally being phallus-shaped, **characterized in that** the device further comprises at least one transducer element (4, 5, 6) which, covered by the sleeve (3), converts the effect of a physical cause affecting an associated portion (10, 11, 12) of the sleeve (3) into an electrical signal, and **in that** the device comprises a processor (9) controlling the operation of the power-driven vibrating means according to the value of said electrical signal.
2. The device (1) according to claim 1, **characterized in that** the physical cause converted by the transducer element (4, 5, 6) is any one of pressure, force, temperature or moisture affecting the associated portion (10, 11, 12) of the sleeve (3).
3. The device (1) according to any one of the preceding claims, **characterized in that** each transducer element (4, 5, 6) is supported in the hollow body (2), which comprises a corresponding opening (13, 14, 15) through which the sensitive part of the transducer element can be accessed, and **in that** where the associated portion (10, 11, 12) of the sleeve (3) is what covers the mentioned opening (13, 14, 15), said associated portion (10, 11, 12) of the sleeve (3) physically contacts the sensitive part of the transducer element or is deformable until physically contacting the sensitive part of the mentioned transducer element.
4. The device (1) according to the preceding claim, **characterized in that** in each portion (10, 11, 12) of the sleeve (3) associated with a transducer element (4, 5, 6), the sleeve (3) is internally provided with at least one projection or protuberance (10a, 11a, 12a) projecting inwardly, intended for exerting pressure against the sensitive part of the corresponding transducer element and for transmitting to it the inward deformation that the sleeve (3) sustains in said por-

tions (10, 11, 12).

5. The device (1) according to any one of the preceding claims, **characterized in that** the power-driven vibrating means (16) comprise at least two electric motors (7, 8) and **in that** there are three transducers (4, 5, 6), the processor (9) being configured for controlling the operation of the power-driven vibrating means (16) according to an operating mode according to which
 - the operation or the operating conditions of a first electric motor (7) are determined by the signal generated by a first transducer element (4); and
 - the operation or the operating conditions of the second electric motor (8) are determined by the signal generated by the second and third transducer elements (5 and 6).
6. The device (1) according to any one of the preceding claims, **characterized in that** the hollow body (2) is divided according to an essentially longitudinal cut determining two mutually coupleable halves (2a, 2b) between which the power-driven vibrating means (16) are arranged and held under pressure.
7. The device (1) according to the preceding claim, **characterized in that** at least one of the halves (2a or 2b) of the hollow body (2) is provided with at least one opening (13, 14, 15) for accessing the sensitive part of a corresponding transducer element (4, 5 or 6) which is supported in a shaped tab (17, 18, 19) in said half of the hollow body which projects immediately below the mentioned opening (13, 14, 15).
8. The device (1) according to any one of the preceding claims, **characterized in that** the hollow body (2) comprises support means (20) for the processor (9) and means for housing at least one battery (21) electrically connected to the processor (9), to the power-driven vibrating means (16) and to the transducer element or elements (4, 5, 6), the device (1) further comprising a series of switches (22) for selecting one from among several operating modes controlled by the processor (9).
9. The device (1) according to claim 8, **characterized in that** it comprises means for setting up wireless communication with another apparatus such that in one operating mode, the operating conditions of the power-driven vibrating means (16) are determined by the information transmitted to them from this other apparatus.
10. The device (1) according to any one of claims 8 or 9, **characterized in that** the power-driven vibrating means (16) comprise at least two electric motors (7,

8) the rotating shafts of which are oriented according to the longitudinal direction in which the hollow body (2) extends, and **in that** in at least one operating mode of the device (1), the direction of rotation of the shafts of the electric motors (6, 7) is the opposite direction.

11. The device (1) according to any one of claims 8 to 10, **characterized in that** the means for housing at least one battery (21) and the processor (9) are arranged in the base of the hollow body (2), protected by a tubular cap (23) axially coupleable to the mentioned hollow body (2) through the end opening (23a) of which, opposite the coupling opening (23b) for coupling with the hollow body (2), the switches (22) can be accessed such that they are easily accessible with the thumb of the same hand with which the user can grip the device (1).

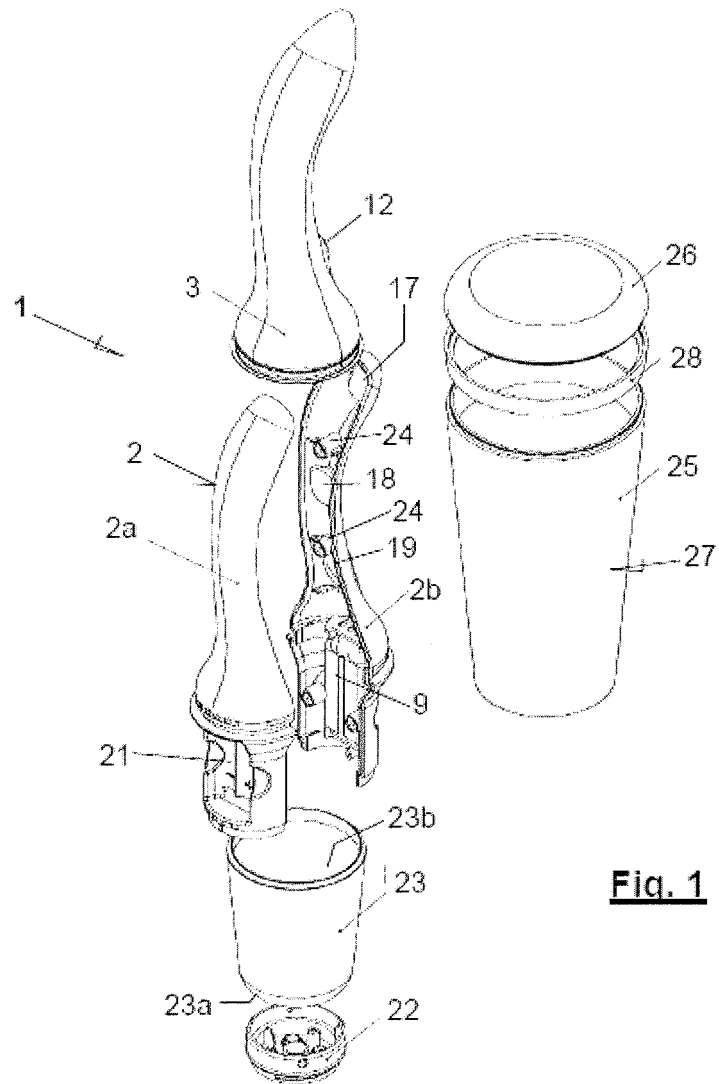


Fig. 1

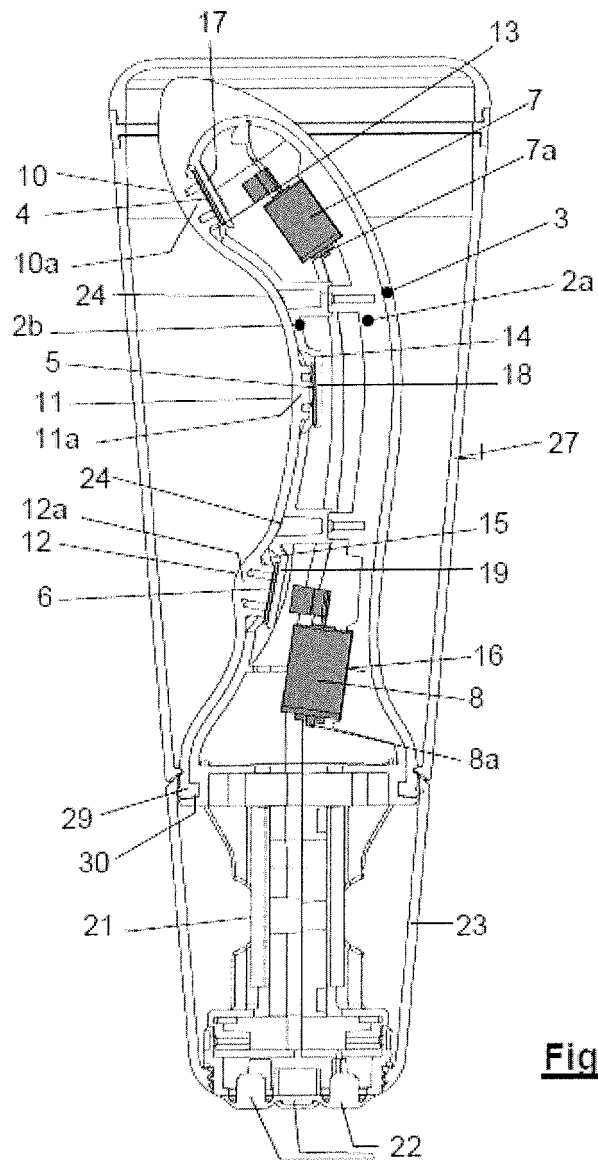


Fig. 2

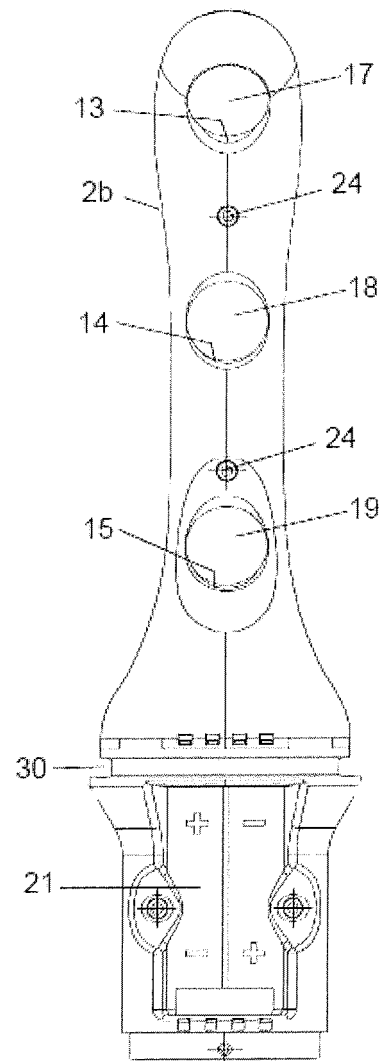


Fig. 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2012/000281

A. CLASSIFICATION OF SUBJECT MATTER

A61H19/00 (2006.01)

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)
A61H

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

DOCUMENTOS DE PATENTES Y MODELOS DE UTILIDAD DE ESPAÑA.

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

EPODOC, INVENES, WPI, PAJ, ECLA.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2011034837 A1 (LEE CALVIN SPENCER) 10/02/2011, paragraphs [4-7]; [16-25]; figures 1-2, 4-6.	1-3, 5, 8, 11
A		4, 7, 10
X	US 2011218395 A1 (STOUT KELSEY MACKENZIE) 08/09/2011, paragraphs [5-8]; [15-33]; [39-41]; [44-45]; figures 1-2, 5.	1-3, 5
A		4, 8-10
X	US 2009270674 A1 (TRZECIESKI MICHAEL) 29/10/2009, paragraphs [7]; [20-40]; figures.	1-2
A		3-5, 8
X	US 2010174136 A1 (SHIM YOUNGTACK) 08/07/2010, paragraphs [11]; [175]; [180-182]; [186-188]; [193-248]; figures.	1-2

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

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Name and mailing address of the ISA/

Authorized officer
J. Cuadrado Prados

OFICINA ESPAÑOLA DE PATENTES Y MARCAS
Paseo de la Castellana, 75 - 28071 Madrid (España)
Facsimile No.: 91 349 53 04

Telephone No. 91 3495522

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2012/000281

Information on patent family members

Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
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US2011218395 A1	08.09.2011	NONE	
US2009270674 A1	29.10.2009	NONE	
US2010174136 A1	08.07.2010	WO2010079934 A2 EP2385817 A2	15.07.2010 16.11.2011

Form PCT/ISA/210 (patent family annex) (July 2009)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 2308446 A1 [0002]