(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 151 296 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
22.03.2023 Bulletin 2023/12

(21) Application number: **21803699.4**

(22) Date of filing: **10.05.2021**

(51) International Patent Classification (IPC):
A63H 33/26 *(2006.01)* ***A63F 7/00*** *(2006.01)*
A63F 9/00 *(2006.01)*

(86) International application number:
PCT/ES2021/070322

(87) International publication number:
WO 2021/229122 (18.11.2021 Gazette 2021/46)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(30) Priority: **12.05.2020 ES 202030433**

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(54) **ILLUMINATED TOY**

(57) The toy is of the type intended to be used jointly with others of the same type, all being controlled by means of a smartphone or similar, where the toys incorporate illumination means and determine an area of activation by infra-red sensor (14) for sequential pulses in accordance with patterns pre-set by the control software, presents the characteristic that it adopts a stackable configuration, aided by magnets (6-6'-7-7') and terminals (9-10) that enable the stabilisation of the toys and enable the charging of the entirety thereof with a single USB cable (17) to be connected to the charge port (4) of the lowest toy in the stack. In order to increase the possibilities of the game and to endow it with a physical component, the incorporation of a speaker (18) and attachment means such as magnets (19), clamps (20) or suction pads (21) has been foreseen, to extend the implementation possibilities of each toy.

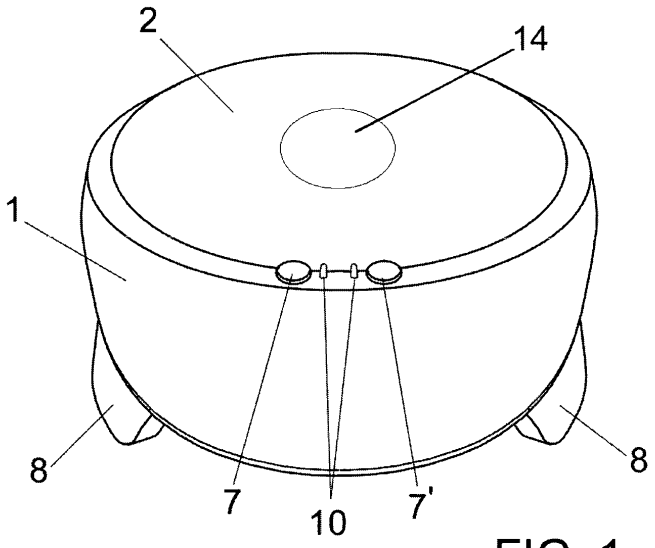

FIG. 1

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Description

[0001] The present invention relates to an illuminated toy, and more specifically to a toy associated with a plurality of other similar toys, equipped with illumination means and infra-red sensors, in order to be activated according to a sequence which may be pre-established or random.

[0002] The object of the invention is to provide an entertaining and didactic toy, which stimulates the attention, memory and reflexes of the player or players.

[0003] It is also the object of the invention that the device extends slightly the modes of play as well as being easily recharged when multiple devices exist, all through a single charging device.

BACKGROUND OF THE INVENTION

[0004] Within the scope of practical application of the invention toys are known in which a casing is fitted with several luminous buttons, controlled by a small microcontroller, in such a way that the player or players must try to memorise and reproduce the sequence of lights emitted through these pushbuttons, sequences which become progressively more complicated as the game progresses.

[0005] To further complicate this type of game, there are devices in which each pushbutton is an independent element, so that they can be separated and placed in different positions, all the toys being electronically interrelated with each other.

[0006] However, this type of toy presents a two-fold problem.

[0007] On the one hand, although they expand the possibilities of play by being able to separate the pushbuttons a certain distance from each other, these devices still have to be placed on a table or flat surface, with the corresponding limitations from the point of view of playability that this entails.

[0008] On the other hand, when multiple toys of this type are available, each and every one of them must be recharged independently, in other words, a charger is needed for each toy, with the corresponding complexity, need for power sockets and extra cost that this entails, or else they require the concurrence of a charging base or other similar element manufactured specifically for this purpose.

DESCRIPTION OF THE INVENTION

[0009] The illuminated toy proposed here solves in a fully satisfactory manner the problems described above in the two aspects mentioned, on the basis of a simple but effective solution.

[0010] To this end, and more specifically, the toy of the invention is based on the structure described above, in which it is made up of a casing that can be illuminated electronically, equipped with an infra-red sensor, and which is linked to other devices of the same type by means of a communications module, as well as to a device controlling them all, such as a mobile phone or similar, with the characteristic that the casing of the toy has a pair of magnets of opposite polarity in its lower part and a pair of magnets of similarly opposite polarity in its upper part, the polarities of the upper and lower pairs being alternated in such a way that the upper and lower magnets occupying the right-hand position will be of opposite polarity, the same happening with the upper and lower magnets located on the left, allowing toys of this type to be stacked together in a stable manner, as they are joined by the magnets and present a curved-convex configuration at the top and curved-concave at the bottom, presenting charging terminals between the respective pairs of magnets.

[0011] In order to charge it, each toy can be connected to a USB cable (micro, mini, etc.).), which will have an external pair of magnets at the end that connects to the toy and an internal pair of terminals similar to those of the toy in its upper area, so that in stacking the toys it will only be necessary to attach the USB connection cable to the lowest toy in the stack, since, as they are all electrically connected in parallel through the connection terminals between their stabilising magnets, each and every one of the stacked toys can be charged simultaneously with a single USB connection cable.

[0012] Therefore, each toy will have, as mentioned above, a communications module through which said toy is sequentially illuminated with respect to the other toys controlled by the player's mobile phone, with the players having to activate the different upper infra-red sensors in the pre-established sequence or in a random sequence, which will be checked by the control software associated with said mobile phone, activating acoustic error signals in the toys in the event of error or exceeding a pre-established activation time.

[0013] In order to improve the play options, specifically to give a physical aspect to the game, in addition to the eminently intellectual one, each toy has been fitted with accessories to hold the device in different positions and places, such as magnets, suction pads, hooks, straps, hangers, etc.

[0014] This means that the toys do not have to be placed exclusively on a table or horizontal surface, but can be placed on other surfaces or objects at different heights and locations, as well as at different angles, giving the game an additional physical component that makes it more fun.

DESCRIPTION OF THE DRAWINGS

[0015] In order to complement the description given below and with the aim of helping to better understand the characteristics of the invention, in accordance with a preferential example of its practical realisation, a set of drawings is attached as an integral part of said description, in which the following has been represented for il-

lustrative purposes and without limitation:

Figure 1.- Shows a perspective view of an illuminated toy made in accordance with the object of the present invention.

Figure 2.- Shows an opposite perspective view of the device in the previous figure.

Figure 3.- Shows a block diagram of the essential electronic elements involved in the device of the invention.

Figure 4.- Shows a perspective view of a stack of toys as in figures 1 and 2, so that they can be charged by means of one single charging device.

Figures 5, 6, 7 and 8 show different accessories for securing the toy in different positions and places, in order to improve and extend the game experience.

Figure 9.- Shows a perspective view of the USB-type charging cable, showing at one end the magnets and terminals for attachment to the toy.

Figure 10.- Shows a perspective view of different accessories.

PREFERRED EMBODIMENT OF THE INVENTION

[0016] In view of the figures shown, it can be seen that the toy of the invention is made up of a casing (1) which is convex on its upper part (2) and concave on its lower side (3), so that the casing includes an on-switch (5) on the lower part, as well as a pair of magnets (6-6') in correspondence with its lower lateral edge, complementary to another pair of magnets (7-7') located on the upper edge, so that when stacking the toys, as shown in figure 4, the magnets (6'-7 and 6-7') are drawn to each other, stabilising the devices and bringing them into contact via said magnetic coupling with the respective pairs of terminals (9 and 10) also established between each pair of magnets (6-6' and 7-7'); the terminals (9) located in the lower part of the toy being flat, while the terminals (10) located in the upper part of the toy are retractable with the aid of a spring that forces them to occupy the pop-up position.

[0017] The casing (1) has anti-slip and arched feet (8) on its underside, which facilitate stacking manoeuvres between devices.

[0018] The terminals (9-10) allow the power supply modules or batteries (15) of all the stacked toys to be connected in parallel.

[0019] The toy is complemented with a USB charging cable (17) that has one pair of magnets (22-22') at the end which is connected to the toy and another pair of retractable terminals (10) located between the magnets (22-22').

[0020] In this way, by means of the USB connection cable (17) linked via the terminals (9) to the charge port (4) of the device located at the bottom of the stack, to which it is attached through the magnets (6-6') of the lower device and (22-22') of the USB cable (17), it is possible to charge each and every one of the stacked toys electrically and simultaneously, thus simplifying the charging process and reducing the resources required for this purpose.

[0021] As can be seen in figure 3, each device will have a control circuit (11), associated with LEDs (12) for illumination of the toy, whose upper part (2) allows action on an infra-red sensor (14) whose activation is possible thanks to the translucent nature of the casing (1), the activation being detected by the control circuit (11), having at least one internal speaker (18) through which sounds are emitted depending on the state of the game, the control circuit (11) being linked to a communications module (13), through which the toys are controlled centrally via a smartphone, tablet or similar.

[0022] Finally, as shown in Figures 5 to 8, each toy is capable of incorporating in correspondence with its lower face (3) different fastening means, such as magnets (19), clamps (20), suction pads (21), as well as being linked by means of the aforementioned magnet (19) to a fastening strap (16) provided with the complementary magnet (23).

[0023] The accessories (19, 20, 21) for fastening the device are attached to it by inserting a T-shaped extension (26) in a slot (24), complemented by a buffer (27) parallel to it, allowing the accessory to be stabilised simply by one turn.

[0024] In the case of the suction pad (21), the "T" shaped extension (26) belongs to a complementary piece (28) which has a hollow cylinder at its opposite end where a protrusion (29) of the suction pad (21) slides into, as shown in figure 10.

Claims

1. Illuminated toy, of the type consisting of a casing (1) which can be illuminated by a control circuit, and which defines in its upper part (2) an area for activation of an infra-red sensor (14), control circuit (11) associated with a communications module (13) through which the toy is controlled jointly with others of the same type by means of a device such as a smartphone, tablet or similar, said device being powered by means of a power supply module or battery (15), **characterised by** having at least one internal speaker (18), and because the casing (1) has a convex upper and concave lower configuration, with arched support legs (8), being stackable, with the characteristic that in correspondence with its lower lateral edge it has a pair of magnets (6-6'), complementary to another pair of magnets (7-7') fitted on the edge of the upper part, for stabilisation in stacking

the toys, there being between each pair of magnets the respective pairs of terminals (9 and 10) connected to the power supply or battery module (15) and parallel electrical connection between the power supply or battery modules of the stacked toys, with the characteristic that the toy incorporates a single cable (17) for simultaneous power supply of toy stacks connectable to the terminals (9) of the lower toy in the stack.

2. Illuminated toy, according to claim 1, **characterised by** having a slot (24) that allows the stable fastening of various accessories (19, 20, 21) for anchoring the device, by means of insertion in said slot (24) of a "T"-shaped extension (26) of said accessories (19, 20, 21).

3. Illuminated toy, according to claims 1 and 2, **characterised in that** the accessories for anchoring the device consist of magnets (19).

4. Illuminated toy, according to claims 1 and 2, **characterised in that** the accessories for fastening the device consist of clamps (20).

5. Illuminated toy, according to claims 1 and 2, **characterised in that** the accessories for fastening the device consist of suction pads (21).

6. Illuminated toy, according to claims 1, 2 and 5, **characterised in that** it has a complementary piece (28) which has a "T"-shaped extension (26) at one end and at the opposite end a hole into which a protrusion (29) of the suction pad (21) fits.

7. Illuminated toy, according to claims 1, 2 and 3, **characterised in that** the magnet (19) can be attached to a fastening strap (16) fitted with the complementary magnet (23).

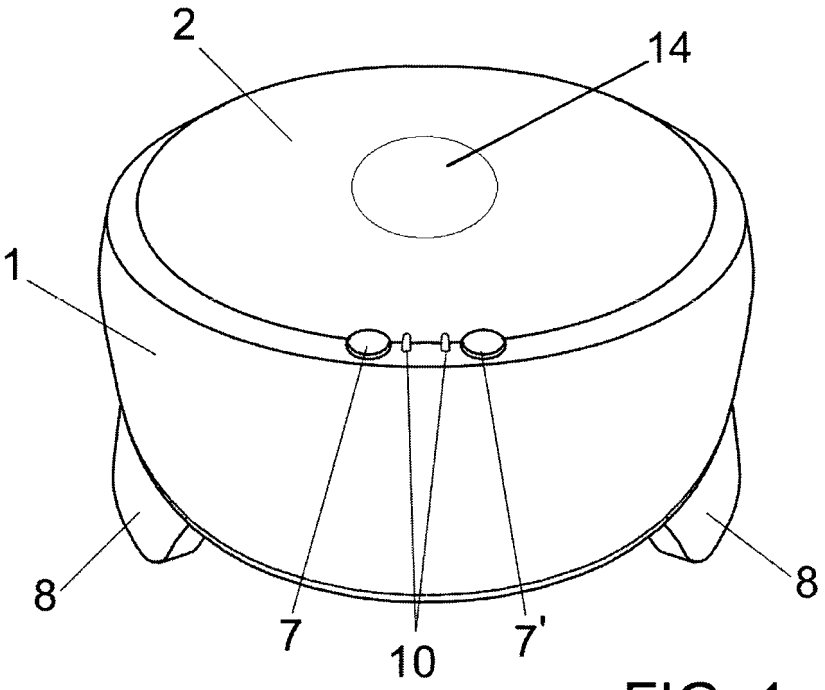

FIG. 1

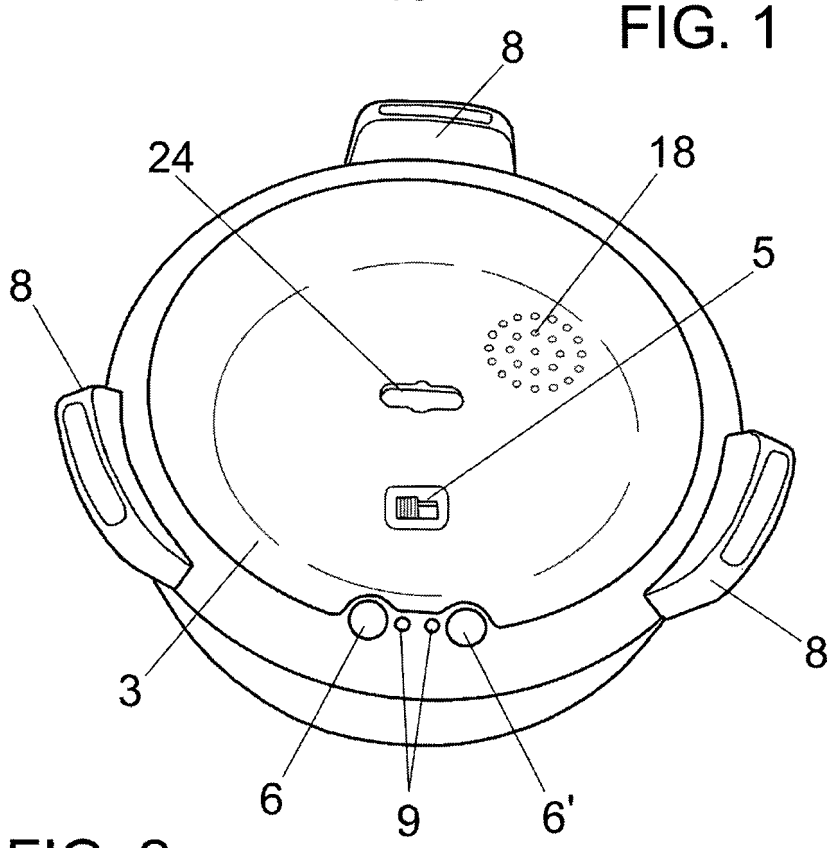

FIG. 2

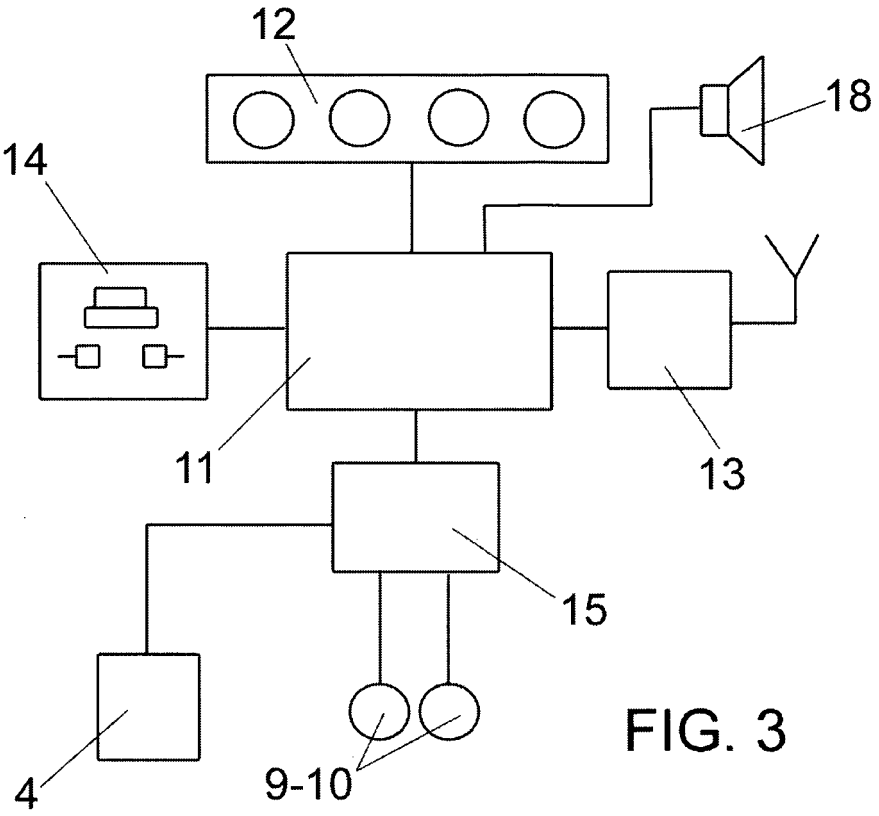

FIG. 3

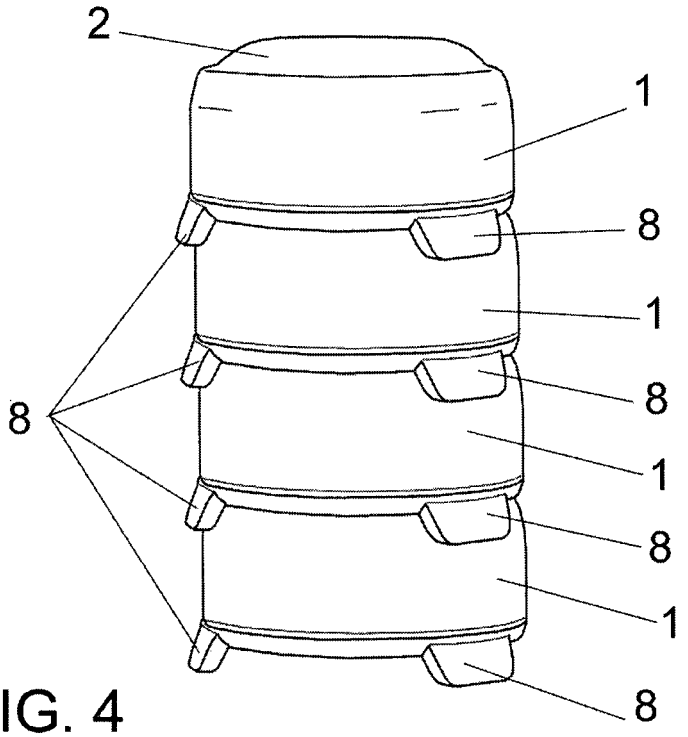

FIG. 4

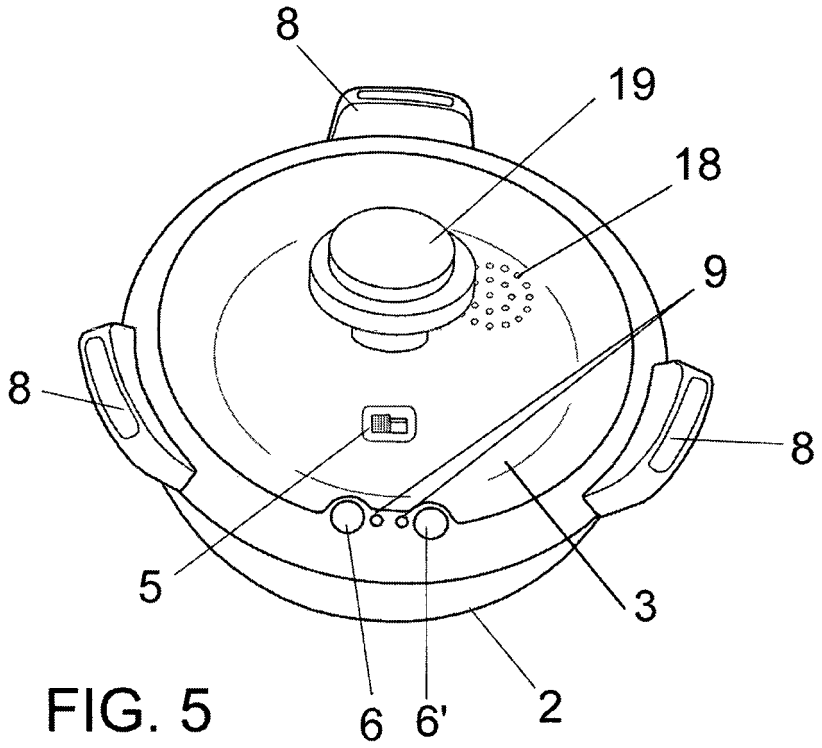

FIG. 5

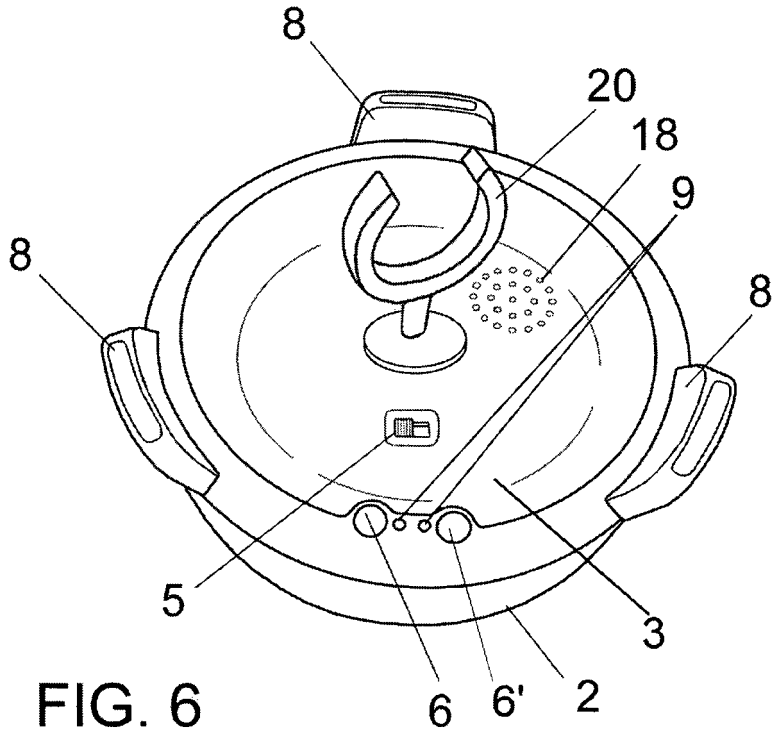

FIG. 6

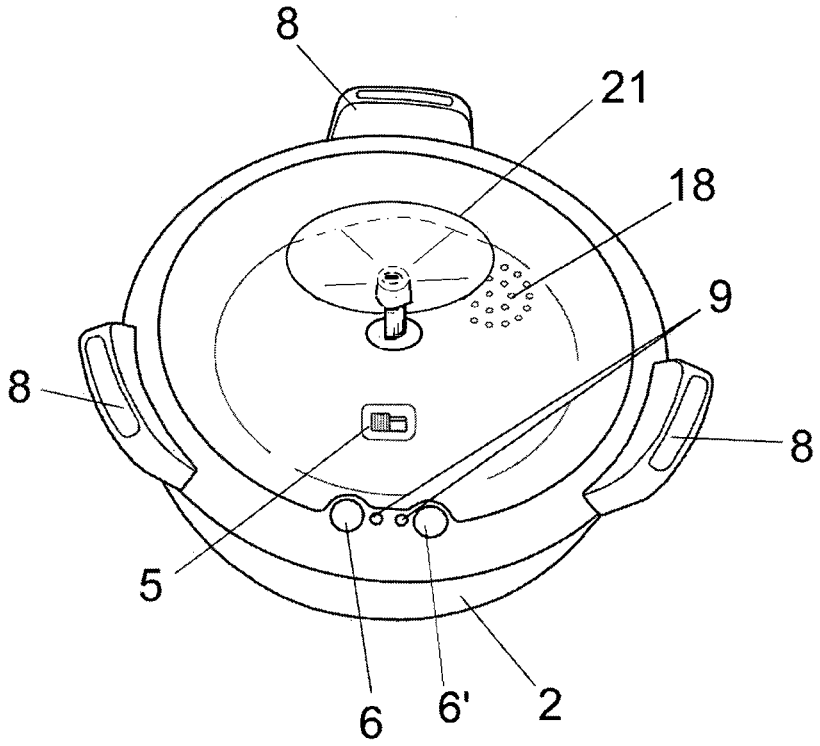

FIG. 7

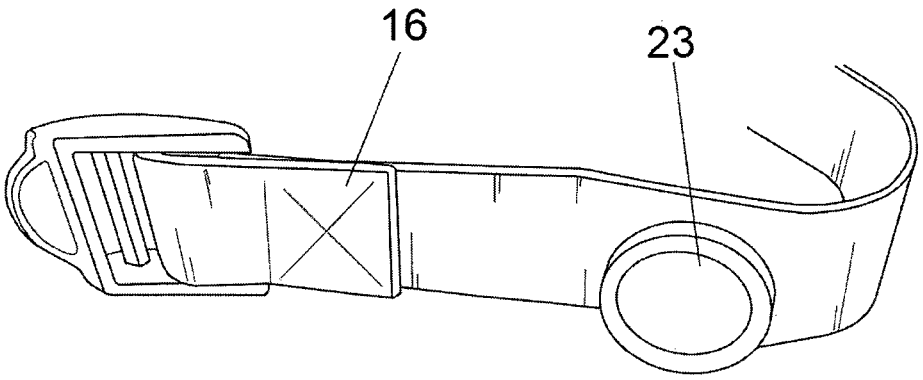

FIG. 8

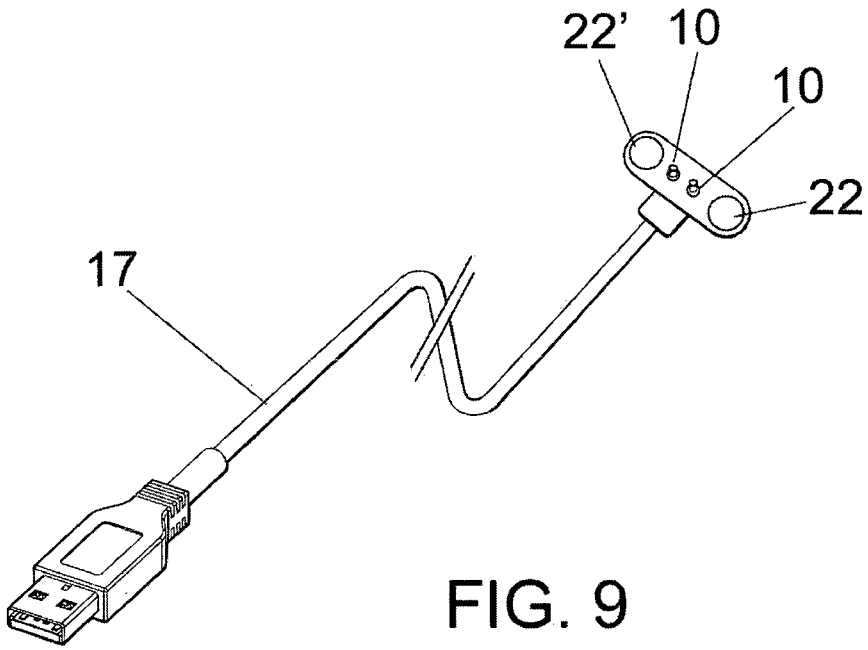

FIG. 9

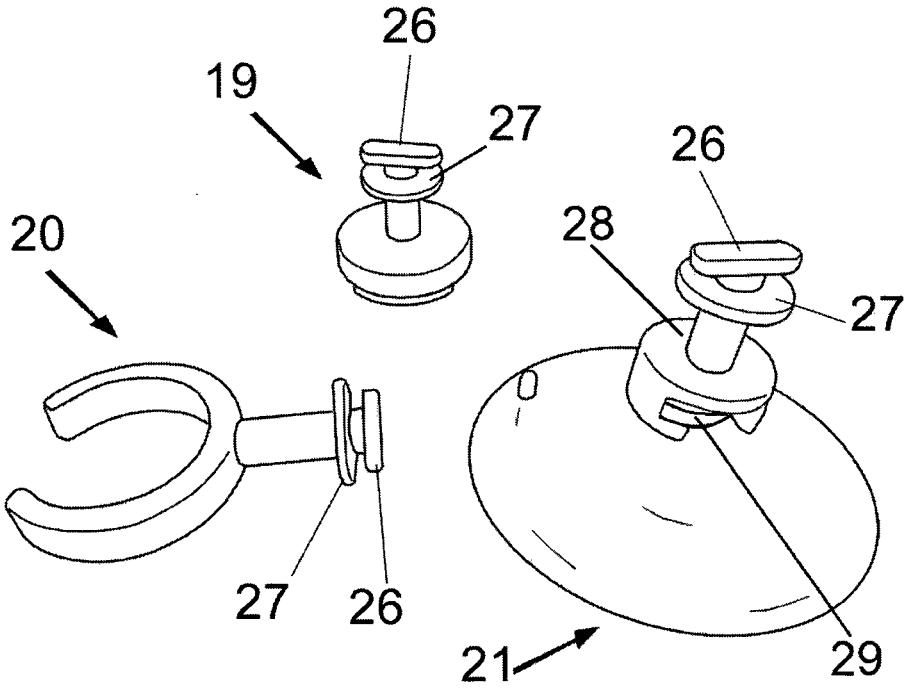

FIG. 10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2021/070322

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

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)
A63H, A63F

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)

EPODOC, INVENES, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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A	WO 2011007349 A1 (BINDER YEHUDA) 20/01/2011, Page 73, line 3 – page 81, line 24; figures 81 - 97b	1-7

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

* Special categories of cited documents:
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Date of the actual completion of the international search	Date of mailing of the international search report
11/06/2021	**(14/06/2021)**
Name and mailing address of the ISA/ OFICINA ESPAÑOLA DE PATENTES Y MARCAS Paseo de la Castellana, 75 - 28071 Madrid (España) Facsimile No.: 91 349 53 04	Authorized officer P. López Calvo Telephone No. 91 3495413

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Information on patent family members

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2021/070322

CLASSIFICATION OF SUBJECT MATTER

A63H33/26 (2006.01)
A63F7/00 (2006.01)
A63F9/00 (2006.01)

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