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(54) **MULTI-PURPOSE BABY CRIB**

(57) The invention relates to a crib including side railings (4) which can be raised and lowered and a supporting frame (18) of a mattress base (19) and which can occupy three positions with three different heights upon actuation of corresponding scissor elements (20) actuated using a motor or actuator (26), said scissor elements (20) including sliding pads (22) that slide along guides provided on the sides of the crib. The aforementioned

supporting frame (18) of the mattress base (19) can occupy a lower or lowered position, an intermediate position and an upper baby-changing position. In addition, the head-supporting segment (19') of the mattress base (19) is articulated so that it can be pivoted upward. The crib also includes an electrical/electronic system with a console (42) that can be used to control the different movements of the above-mentioned parts and to set up a video monitoring system for the baby in the crib.

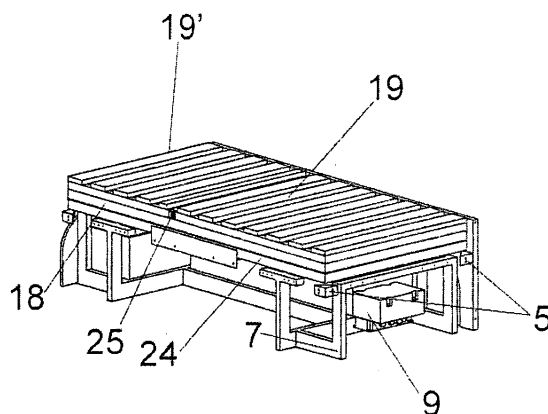


FIG. 3

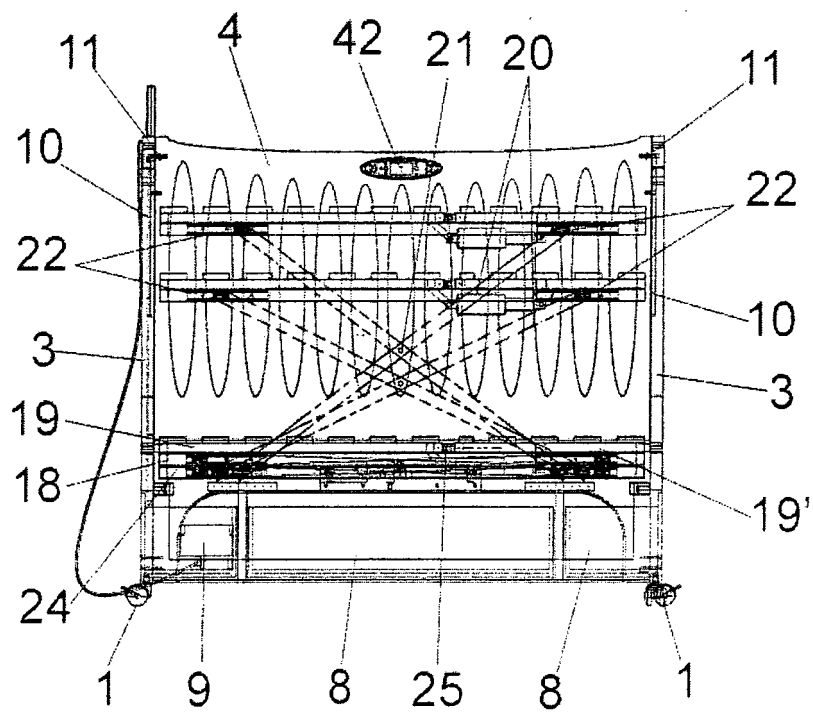


FIG. 4

Description

Object of the Invention

[0001] The present invention relates to a multi-purpose baby crib, having features which allow automatically or manually raising and lowering the supporting frame of the mattress base and raising or lowering the back until reaching an angle of 30 degrees, as well as one or the two side railings manually. It is furthermore complemented with a radio control video monitoring system which allows knowing at all times the situation of the baby who occupies the crib, activating a music storing element seeking to make it sleep more pleasant with different musical melodies or with the recorded voice of the parents and pressing the crib rocking action.

[0002] The object of the invention is to facilitate, for both child education professionals and parents of babies, the operations of placing them inside the crib, as well as taking them out, without harmful stresses for the adult's body, especially in cases in which the delivery has been by means of a cesarean section, the caring, diaper changing and monitoring tasks for the baby also being facilitated.

Background of the Invention

[0003] Both at school and domestic level, babies sleep in cribs, which usually have one or two side railings which can be raised and lowered in a sliding manner to facilitate placing the baby on the mattress, and of course to facilitate taking it out.

[0004] Nevertheless, the height at which the mattress is located in a crib is not the suitable one but rather it is low, which means that the adults in charge of the baby are subjected to harmful stresses for their body (lumbar pain, muscular pain, backbone injuries, etc.), especially those people who are constantly caring for babies, as is the case of nursery schools and other child care establishments, where the action of taking out and placing babies in the crib takes place repeatedly.

[0005] In addition, there are cribs in which the supporting frame of the mattress base can vary in height, which allows placing it in two positions, a lower position and another intermediate position, such that the locking in any of said positions is performed by means of a pin or other elements, but the partial disassembly and assembly of the structure being necessary for the change of position, which involves an inconvenience, loss of time and even forced work which normally make it an unusable system.

[0006] In both cases, the baby cannot be in the crib, firstly because the movement of the railing causes it to wake up and secondly because it is necessary to disassemble part of the elements of the crib. It is unknown if there are means based on which the parents or educators can perform the action of freely raising and lowering the assembly of the mattress base and mattress of the child

crib with the baby inside it and without causing it any harm or discomfort.

[0007] Furthermore, the mattress base for supporting the mattress in cribs does not have the possibility of reclining the area of the back or head to achieve putting the baby to sleep when it has respiratory, mucus, reflux or infant colic problems.

[0008] The existence of cribs which can be automatically rocked from one side to the other to make the baby sleep by itself are also unknown. Said mechanism is actuated from the crib itself or through a radio control command element.

[0009] In relation to the remote monitoring apparatuses for babies, although there are systems which allow hearing and seeing the child or baby in a remote manner, they are auxiliary elements, which are not incorporated in the crib furniture, like a dim light which accompanies the baby and makes it feel safe.

[0010] The incorporation of mechanical elements enables unifying the functions of two basic pieces of furniture in raising babies: a crib and changer all in one.

Description of the Invention

[0011] The proposed crib has been designed to solve the problems set forth above and at the same time to achieve other features which conventional cribs lack, i.e., facilitating the professional and domestic task in relation to sleeping, changing and monitoring babies, furthermore allowing those babies who have difficulties in falling asleep to achieve a better position to sleep without problems.

[0012] More specifically, the crib of the invention is formed from a fixed structure with two lower side walls with respect to which two side railings can move in an upward and downward direction. Said pair of railings is complemented with two other walls, a front or head wall and another rear or foot wall, the lower side walls being fixed thereto by means of screws, with the collaboration of parts established in the corners.

[0013] At the lower part it incorporates a structure for assembling drawers, as well as means for supporting motors and other electric power supply and control elements, such as batteries for the autonomous operation of all the mobile means of the crib.

[0014] In the front and rear walls there have been provided, close to their side edges, suitable guides for the upward/downward sliding of the side railings, provided as protection means for preventing the baby from falling in the raised position thereof and allowing taking the baby out in the downward position of any of them.

[0015] The crib further has a frame for supporting the mattress base, which is raisable and obviously lowerable, to be able to place it at several heights, specifically a lower height for putting the baby to sleep, an intermediate one for taking out the baby and/or placing it inside or when the latter already has a certain age, and a third or upper baby-changing position; it furthermore having

been provided that the front or head area of the mattress base supported in said frame has the capacity to be inclined in an upward direction, allowing the baby to occupy a position in which its trunk or head are inclined in a raised manner with respect to the rest of the body to prevent possible respiratory and/or reflux problems suffered by babies.

[0016] The mentioned supporting frame of the mattress base is arranged on a fixed structure which is below it, in which structure means which allow rocking the crib from one side to the other in order to help the baby to fall asleep have been provided.

[0017] The movements of the mentioned frames and components, as well as the actuation of the motors and/or driving means, are performed from an electronic control and management system.

[0018] The raising and lowering of the supporting frame of the mattress base are performed by means of the pivoting of two pairs of flat bars articulated in a scissor-like manner, which at their ends slide along respective guides established on the sides of the fixed structure on which the frame of the mattress base is arranged, said scissor elements being actuated by means of linear actuators articulated to respective front and rear tubular crosspieces for the articulation of the ends of the scissor elements, such that depending on whether the actuators expand or retract the tubular crosspieces will be pushed and pulled and with it the unfolding/folding of the scissor elements and therefore the raising and lowering of the supporting frame of the mattress base.

[0019] The means which allow rocking the crib are formed from a substructure established at the lower part in each of the front and rear parts, such substructure being formed by two parts separated and fixed to the lower side walls of the crib, those parts incorporating respective tubular guides with bearings, all this being linked to the fixed structure in which the supporting frame of the mattress base is supported, such that through said bearings it is possible for the assembly of the structure with the supporting frame, including the scissor elements of the mattress base, to move transversely with respect to one another to rock the crib, which is carried out from the actuation of a rotary motor acting on a cam associated to a connecting rod which is connected with the structure itself by means of an articulated attachment.

[0020] Thus, when said rotary motor is activated, the cam makes the assembly of the structure with the frame of the mattress base slide with respect to the mentioned substructure, which allows performing the rocking movement of the crib.

[0021] It has also been provided that the crib includes an integrated electrical-electronic system capable of controlling and managing programmed actions to the different actuation motors for raising/lowering the frame of the mattress base, for pivoting the head of the mattress base and for rocking the crib.

[0022] Specifically, it comprises a console which can be assembled in any visible or invisible part of the crib,

said console having an active video monitoring system with a camera, as well as an audio system capable of selecting and playing, for example, songs audible through respective loudspeakers forming part of the system itself. It also has a microphone for detecting the crying sound of the baby, an environmental temperature sensor in the crib, which temperature is reported for the display thereof on a screen established in the console.

[0023] Also in the electrical-electronic control and monitoring system there has been provided a luminosity sensor, with an infrared sensor for night vision and ambient light as an accompanying element, having an antenna to emit the digital data by radio frequency to a receiver-emitter.

[0024] The corresponding control module manages the data collected by the sensors, such data being able to be emitted to a receiver by radio frequency, those controls being shown on the screen of the console, as well as the status of the power supply batteries, the audio files, environmental temperature, etc.

[0025] Likewise, it has been provided that a series of push-buttons necessary for controlling the motors, the camera, the ambient light, the selection of the programming modes of the raising mechanisms, selection of the available audio files, display of the environmental temperature, volume of the sound, etc. are established in the control panel of the console

[0026] In relation to the video monitoring system, it is activated with the crying of the baby, while at the same time a music file is activated, or the activation of the rotary motor for rocking the crib and allowing to soothe the baby can be simultaneously or alternatively selected, this activation being able to be carried out by means of a wireless receiver, it having been provided that the digital audio, video and data signal is emitted by radio frequency to a receiver command element which will have a loudspeaker, a color screen for displaying the situation of the baby and command elements which will allow managing the controls of volume of the loudspeaker, the activation of music or movement of rocking the crib, or deactivation of these actions, as well as the possibility of activating an image-capturing camera which allows seeing the baby and observing it when the display of the aforementioned data and parameters is to be carried out.

[0027] It has also been provided that the system includes audio and video sockets for connecting the crib to television or a closed TV circuit, in which several cribs can be displayed simultaneously.

[0028] It likewise has the possibility of performing all the orders of the motors without needing to incorporate the video monitoring system, through an electrical command element, with the necessary push-buttons, connected to the control module of the crib, as an alternative to the portable video monitoring system.

[0029] Finally, it must be stated that the crib is complemented with a lower part or structure which allows assembling individualized drawers to store various complements, in one of which the power supply system, i.e.,

the batteries which will be rechargeable, can be located.

Description of the Drawings

[0030] To complement the description which will be made below and for the purpose of aiding to better understand the features of the invention according to a preferred practical embodiment thereof, a set of drawings is attached as an integral part of said description, in which the following has been depicted with an illustrative and non-limiting character:

Figure 1 shows a depiction according to a general perspective view of the crib object of the invention.

Figure 2 shows a perspective view of the inner structure incorporating at the lower part the crib depicted in Figure 1, and in which structure the supporting frame for the mattress base with the scissor elements in a folded position can be seen.

Figure 3 shows a perspective view of the assembly depicted in the previous figure from another angle, with the mattress base located on the corresponding supporting frame.

Figure 4 shows a side view with the raising mechanism for the supporting frame of the mattress base in a lowered position and in a dashed line the intermediate and upper positions.

Figure 5 shows a perspective view of the crib lacking one of its sides, allowing seeing the supporting frame of the mattress base, including the latter, in a lowered position, the raised position of this assembly furthermore being seen in a dashed line+.

Figure 6 shows a detail of the elements involved in the sliding mechanism for rocking the crib and the attachment thereof to the system for raising to the supporting frame of the mattress base.

Figure 7 shows another side view of the crib, depicting in this case the module or segment corresponding to the head of the supporting frame of the mattress base in a pivoted position in an upward inclination.

Figure 8 shows a front view of the crib of the invention.

Figure 9 shows a detail of the means used in the anchoring and immobilization of the foldable railings in the raised positions that they can occupy.

Figure 10 shows a depiction corresponding to a general perspective view of the mechanism of scissor elements for raising the supporting frame of the mattress base, the raised position having been depicted in a dashed line. This figure allows seeing in detail the way to link the ends of the arms corresponding to the scissor elements to the corresponding sliding pads.

Figure 11 shows respective front, rear and cross-sectional views of the console with the push-buttons, sensors, display screen and other components included therein.

Figure 12 shows a front view and another side view of the optional electrical command element which can form part of the assembly of the crib for controlling the corresponding electrical mechanisms.

Figure 13 finally shows front, rear and side views of a radio frequency command element with a display screen and corresponding push-buttons.

Preferred Embodiment of the Invention

[0031] As can be seen in the mentioned figures, the crib of the invention has a general structure with support legs provided with rotation means or wheels for movement, being formed by a pair of lower side walls (2), a pair of front and rear walls (3), and railings (4) which are movable in an upward/downward direction, the latter being offset with respect to the lower and fixed walls (2).

[0032] The front and rear walls (3) are fixed to the lower and side walls (2) with the collaboration of right-angled parts (5) in correspondence with the corners, whereas the rotating wheels (1) are assembled in respective corner parts (6) which enable assembling the corresponding brake for such wheels. It internally includes a lower and fixed structure (7) especially configured to allow assembling both side and end drawers (8), with the particularity that in one of those drawers (8) there will be assembled, duly fixed, a battery and electric power supply system (9), the batteries being rechargeable, all this in order to allow the autonomous operation of the different removable means included in the actual crib.

[0033] The sliding in the raising and lowering of the side railings (4) is performed along corresponding guides (10) established in the front and rear walls (3), and close to the side edges thereof, which guides, as can be seen in detail in Figure 9, are complemented with latches or locks (11) keeping the railing or railings (4) fixed in any of the three positions which it can occupy, one position corresponding to the completely lowered position, another intermediate position to allow taking out the child or baby or placing it in the crib, and another upper baby-changing position.

[0034] The mentioned safety latch or lock (11) comprises a bushing or sleeve (12), as well as an actuation lever (13), a spring (14) for allowing the retraction of the latch (11) and provided to push the latter to the locked position, in which position the mentioned latch or lock (11) is located in a bushing (15) precisely provided in a guide (10), all this such that in order to achieve a good guiding of the corresponding side railing (4), bolts (16) which can be assembled in a threaded manner on corresponding blocks (17) have been provided.

[0035] In relation to the means of the raising means for the supporting frame (18) of the corresponding mattress base (19) for the mattress, they are formed by means of a pair of scissor elements the arms (20) of which, for each scissor element, are articulated to one another at a common point (21), as can be clearly seen in Figure 10, with the particularity that those arms (20)

of the scissor elements have at their ends sections (22) determining sliding pads that slide over corresponding guides (23) established to that effect in a fixed structure (24) located below the supporting frame (18) of the mattress base (19), the latter being provided with a front or head segment (19') which pivots with respect to an articulation (25) provided on each of the sides of that mattress base (19), all this such that that head segment (19) can pivot in an upward direction to occupy an inclination and allow the baby to occupy an optimal position according to the needs, for example to prevent reflux, when the baby has it, etc.

[0036] The actuation of the scissor elements and therefore of the arms (20) forming them, for the raising and lowering movements of the supporting frame (18) of the mattress base (19), is performed by means of linear actuators (26), which on one hand are articulated to respective crosspieces (27), formed by tubular elements which attach to one another the ends of the arms (20) corresponding to the scissor elements and on the other hand are articulated to an intermediate fixed sub-structure (28) established on the lower fixed structure (24), such that through those linear actuators (26) and their articulations the unfolding or folding of the arms (20) corresponding to the scissor elements, and consequently the raising or lowering of the frame (18), is performed by pushing or retraction.

[0037] On the sliding pads (22) there is assembled a coupling flat bar (29) which allows assembling a spherical bearing (30), as is clearly seen in Figure 6, which allows absorbing misalignments of the mechanism and allows raising the frame (18) when the pads (22) slide along the guides (23).

[0038] Furthermore, the systems of the arms (20) of the scissor elements are attached to one another in pairs by means of radial bearings (31), with the interposition of an axial bearing (32), attached by means of a threaded shaft (33) and a tightening nut (34).

[0039] Furthermore, the mentioned arms (20) are also attached through the mentioned tubular crosspieces (27), in collaboration with bolts (35) penetrating inside the mentioned tubular crosspieces (27), as is clearly seen in Figure 6.

[0040] In addition, a substructure (36) has been provided which is determined by two independent parts (36' and 36'') established at the lower part of the side and rear walls (3) of the crib, these parts (36' and 36'') including respective tubular guides (37) which, in combination with bearings (38) provided in the fixed structure (24), allow the entire assembly formed by the frame (18), with the mattress base (19) and the fixed structure (24) itself, to be able to move transversely to establish the rocking of the crib, there being provided to that end a rotary motor (39) acting on a cam (40) through which a lever (41) is actuated, by means of which it is attached in an articulated manner to the fixed structure (19), such that when the rotary motor (39) is activated, the eccentricity of the cam (40) causes the sliding of the fixed structure (24)

itself and, with it, of the frame (18) with respect to the substructure (36), being able to perform the movement necessary for rocking the crib.

[0041] Complementarily, and at the same time as the frame (18) is raised, a roll-out curtain (94) is unfolded, which curtain is tensioned by the action of a spring and is assembled inside the perimetric sections of said frame (18), as can be observed in Figure 6. The gaps which are defined between the mentioned frame (18) and the fixed structure (24) when the latter is raised are thus closed, preventing the access to the mechanism from the outside through the four sides of the crib.

[0042] Based on the description made up until now, it can be seen that the side railings (4) can be raised and lowered on the corresponding guides and occupy positions of access to the inside of the crib, whereas the supporting frame (18) of the mattress base (19) can likewise be raised and lowered and occupy three positions, a lower position, an intermediate position and another upper position, the latter being a baby-changing position, all this by means of the actuation of corresponding motors or actuators and with the possibility of performing the movements in a manual manner or in an automated manner.

[0043] In addition, the crib is complemented with an integrated electronic system, formed from a console (42), in which an audio and video monitoring system is integrated, as well as controls of the electrical-electronic system, there being established in that console (42) a push-button (43) for selecting the movement of the actuator (26') for raising the frame (18), two areas being established in that push-button (43), a raising area and another lowering area according to the pressing, such that if the push-button (43) is released, the raising stops and if the position is maintained as a result of the brake of the actuator (26) itself. Furthermore, said console (42) includes another actuation push-button (44) for carrying out the raising to the upper position of the frame (18) itself, whereas a push-button (45) allows establishing the intermediate raised position when such button is pressed.

[0044] It also includes a push-button (46) for positioning the frame (18) in a situation different from the previous ones.

[0045] On such console (42) there is furthermore a push-button (47) for activating the electrical actuation system of the motors, as well as a push-button (48) which allows activating a lamp with a dim light, further including a grouping of four push-buttons (48) which allow selecting the four radio frequency emission channels for synchronizing with a receiver command element (49) depicted in the views corresponding to Figure 3.

[0046] A push-button (50) which allows manually activating the respective actuator (26) for raising the head segment (19') corresponding to the mattress base (19) is also included. A push-button (51) allows establishing the maximum raised position of said back segment (19'), such that a push-button (52) will be acted upon to reach the rest position from the raising of such head segment

(19'), also including a push-button (53) through which the raising program is accessed, programming a determined position and for a controlled time, after which the head segment (19') is positioned in its initial position, i.e., without being raised.

[0047] Musical equipment can be activated by means of a push-button (54) when, for example, the baby wakes up or cries.

[0048] A push-button (55) allows, in a timed manner, the mechanism to act and the crib to be rocked when, for example, the child cries.

[0049] The mentioned console (42) further includes a control push-button (56) and another push-button (57) to actuate the play and select a song, forward, whereas with the push-button (58) the next song will be selected, including a stop and pause push-button (59).

[0050] Said console also includes stereo loudspeakers (60) to play audio files, such loudspeakers being located in the rear face of the console (42) itself, further including an integrated microphone (61) to detect the crying of the child, as well as a temperature sensor (62) which allows knowing the temperature inside the crib and displaying it on a screen (63) provided in the front face of the console (42) itself. A push-button (64) allows activating a lighting lamp (65) provided in the rear face.

[0051] The video monitoring system integrated in the console (42) itself includes a camera (66) with a sensitivity of 0 lux for night vision, focused inside the crib and on which it can be oriented through the command element (67), being complemented with a luminosity sensor (68) and infrared leds (69) allowing night vision, to control the evolution of the child when required by the low luminosity conditions.

[0052] The mentioned system is activated by means of a sound sensor, automatically or actuating it through the portable receiver (49).

[0053] Said audio and video system has a TV/PC socket for being able to connect the camera to a closed television system, the cables emerging through the hole (70) of the console (42) and through the socket (71) thereof, such that when the child cries the mentioned camera and the sound sensor are automatically activated, being able to select the sounds through the loudspeakers (60). At the same time, the audio and video signal is sent to the wireless receiver (49), such as the one shown in Figure 13, which is activated, playing the crying of the child through the loudspeakers (72), the image being observed through the screen (73) of the receiver command element (49) itself, the latter further including push-buttons (77, 78, 79, 80 and 81), as depicted in Figure 13, in which the mentioned radio frequency emitter-receiver command element (49) is provided to receive digital signals from the emitter of the crib and emit signals to the crib itself, in order to manage the different elements of the system.

[0054] The existing elements (76) form a selector of four individual channels, whereas the push-button (77) is an on and off light, and the screen (73) for displaying the images sent by the camera (66) of the console (42),

including an on and off push-button (78) for the video monitoring system, in order to be able to activate it when desired and see the baby, such that by means of a push-button (80) the rocking program of the crib to put the baby to sleep can be selected when it is detected that the child is crying. A push-button (79) for selecting music or activating it when the child cries, controlling the volume of the command loudspeaker by means of a push-button (81), has also been provided. Finally, the receive command element (49) includes an integrated loudspeaker (72), whereas at the rear part it includes an audio and video connection (74) and a battery charger socket (75).

[0055] Finally, Figure 12 shows an electrical and manual command element (83), which will be used when the console (42) with an integrated end control panel and without a radio frequency system, is not installed, such that by means of this command element (83) the motor or actuator (26') for raising the supporting frame (18) of the mattress base (19) can be activated, which activation will be performed towards the positions programmed in the control. By means of the push-buttons (84, 85 and 86), the lower, intermediate and maximum raised positions of the mentioned frame (18) can be automatically positioned, whereas by means of the push-button (87) the vertical raising of said frame (18) can be manually positioned, actuating the push-button (88) to lower said frame manually. When the actuation on the frames (87 and 88) ceases, the motor or actuator (26') stops. By means of another push-button (89), the head segment (19') corresponding to the mattress base (19) is raised, the movement of the corresponding actuator (26') stopping such that by means of the actuation on the push-button (90) the programmed function for raising the mentioned head segment (19') of the mattress base (19) is activated, and with another press it is deactivated. The actuation on the push-button (91) entails the activation/deactivation of the motor (39) through which the crib is rocked, whereas by means of the push-button (92) the electrical system of the crib is activated/deactivated, further including a push-button (93) for the lowering towards the rest position of the head segment (19') corresponding to the mattress base (19).

Claims

1. A multi-purpose baby crib which, being formed from a structure in which there are established lower side walls (2), front and rear walls (3) and side railings (4) which can be raised and lowered with respect to said walls (2 and 3), further comprising the corresponding frame (18) for the mattress base (19) for supporting the mattress, is **characterized in that** the supporting frame (18) of the mattress base (19) is connected with a pair of side scissor elements (20) which allow raising and lowering it to be able to be placed in three different height positions, a lower or lowered position, another intermediate position and another up-

per baby-changing position, said scissor elements (20) being actuated by means of articulated linear actuators (26) between corresponding tubular cross-pieces (27) for the attachment of the ends of the arms forming the scissor elements (20), and an intermediate part (28) belonging to a fixed structure (24) provided below the supporting frame (18) itself of the mattress base (19), which structure (24) is assembled on a substructure formed by two parts (36' and 36'') fixed on the inside of the side and lower walls (2) of the crib, there being assembled in such substructure a rotary motor (29) which, through an eccentric cam (40) and articulation connecting rods, is connected with the fixed structure (24) to allow the assembly formed by the latter with the supporting frame (18) of the mattress base (19) and the scissor elements (20) to move transversely towards one side and the other with respect to said substructure, to rock the crib; with the particularity that the mattress base (19) has a segment (19') corresponding to its head, which is articulated (25), allowing the pivoting of said head segment (19') towards a raised inclined position by means of manual actuation or through an actuation motor corresponding to an extensible/retractable actuator (26'); there having been provided an electrical-electronic management control system for the different actuations and movements, including a console (42) with a control panel and display screen (63), as well as an active video monitoring subsystem with an image-capturing camera (66); an audio subsystem, a microphone (61) for detecting crying sounds of the baby, temperature sensor (62) and control means for the situation and/or status of the baby, all this with an electric power supply based on rechargeable batteries (9) located at the lower part of the crib.

2. The multi-purpose baby crib according to claim 1, **characterized in that** the lower side walls (2) and the front and rear walls are fixed to one another with the collaboration of right-angled parts (5) established in the respective corners.
3. The multi-purpose baby crib according to claim 1, **characterized in that** at the lower part it includes an additional structure (7) for assembling drawers.
4. The multi-purpose baby crib according to claim 1, **characterized in that** the side railings (4) slide along corresponding vertical guides (10) provided close to the side edges of the front and rear walls (3), being complemented with safety latches (11) for keeping the railings (4) secured in any of the raised positions.
5. The multi-purpose baby crib according to claim 4, **characterized in that** the scissor elements for raising/lowering the supporting frame (18) of the mattress base (19) have at the ends of the arms forming

them sliding pads (22) that slide along respective guides (23) provided on the sides of the fixed structure (24); it having been provided that the ends of each pair of arms of the scissor elements (20) are attached by means of a pair of radial bearings (31) and an intermediate bearing (32), being linked to the ends of respective tubular crosspieces (27), in combination with bolts and spherical bearings (30) established in coupling parts assembled in the sliding pads themselves.

6. The multi-purpose baby crib according to claim 1, **characterized in that** the fixed structure (24) arranged as a support of the supporting frame (18) of the mattress base (19) is assembled on a structure formed by two parts (36' and 36'') fixed to the lower side walls (2) through axial bearings (38) provided in the fixed structure (24) and associated with tubular guides (37), allowing the side movement of the assembly of said fixed structure (24) with the supporting frame (18) of the mattress base (19) together with the scissor elements (20) and therefore the rocking of such assembly, in combination with the eccentric cam (40) associated with the rotary actuation motor (39).
7. The multi-purpose baby crib according to claim 1, **characterized in that** a roll-out curtain (94) is associated with the frame (18), which curtain is tensioned by the action of a spring and is assembled on the inside of the perimetric sections of said frame (18), such that said curtain closes the gaps which are defined between the mentioned frame (18) and the fixed structure (24) when the latter is raised.
8. The multi-purpose baby crib according to claim 1, **characterized in that** the console (42) of the control and video monitoring subsystem is assembled on the crib itself and has, in addition to the screen (63) on which information is displayed, the image-capturing camera (66), sound capturer loudspeakers (60) and push-buttons for activating the corresponding actuation motors and/or actuators (26, 26' and 39) to achieve the different raised and/or lowered positions of the supporting frame (18) of the mattress base (19), as well as the pivoting of the head segment (19') of the mattress base (19), and for the side movement determining the rocking of the crib; further including push-buttons for selecting the different radio frequency emission channels (48) for synchronizing with a radio frequency emitter-receiver command element (49) forming part of the control system itself, as well as a push-button for activating music and push-buttons for controlling and managing the corresponding audio files, the latter being able to be played through loudspeakers (60) provided in the rear face of the console (42) itself.

9. The multi-purpose baby crib according to claim 8, **characterized in that** the console (42) further includes an environmental temperature sensor (62), displayable on the screen (63), a push-button (64) for activating a lamp or lighting element (65) focused towards the inside of the crib itself, as well as a luminosity sensor (68) and an infrared system (69) allowing night vision to control the evolution of the baby.
10. The multi-purpose baby crib according to claims 1 and 8, **characterized in that** the radio frequency emitter-receiver (51) includes a selector of individual channels (76), an on/off push-button (77); an image display screen (73) for the images sent by the capturing camera (66), an on/off push-button for the video monitoring system, which allows activating it when desired and allows observing the baby, a push-button (80) for selecting the rocking program of the crib, a push-button (79) for selecting music, a push-button (81) for controlling the volume of a loudspeaker (72), as well as audio-video connections (74), a battery charger socket (75), and a rechargeable lithium battery (82).
11. The multi-purpose baby crib according to claims 1 and 9 to 9, **characterized in that** it optionally includes an electrical command element (83) as a substitution of the console (42) with a control panel and of the radio frequency system, said electrical command element (83) including a control unit for managing the electric power supply and controlling the programming of the actuation motors and/or actuators for raising/lowering the different positions of the supporting frame (18) of the mattress base (19), as well as for pivoting the head segment (19') of the mattress base (19) itself, and for rocking the crib.

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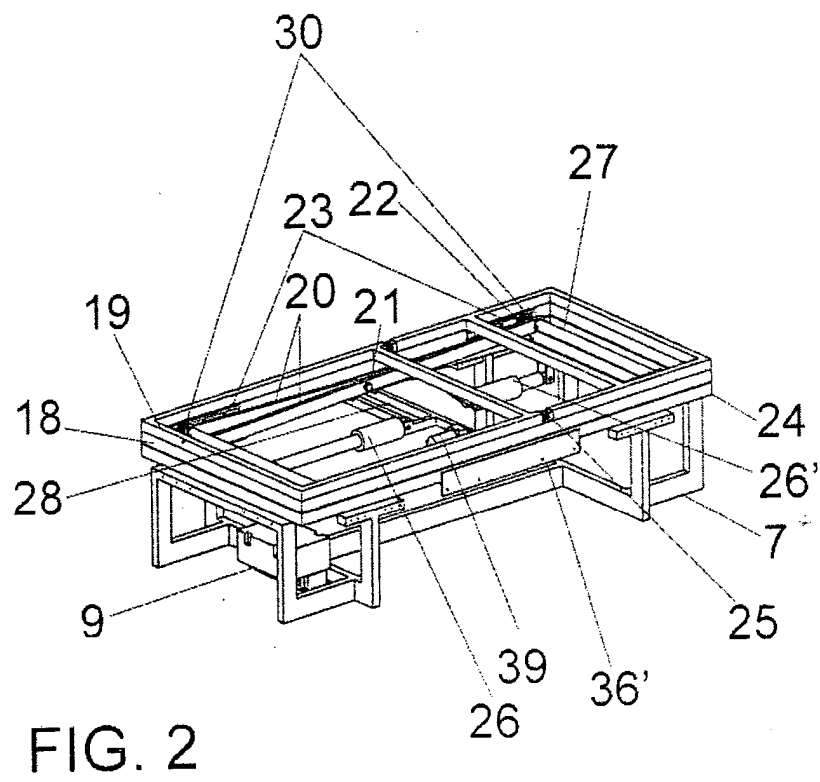
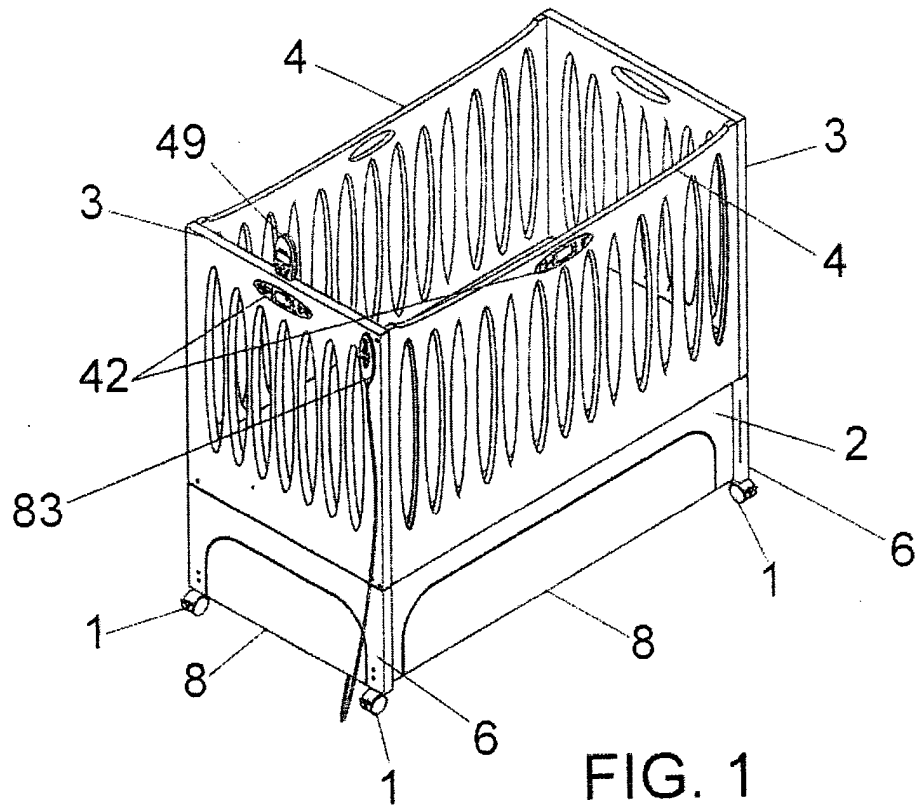
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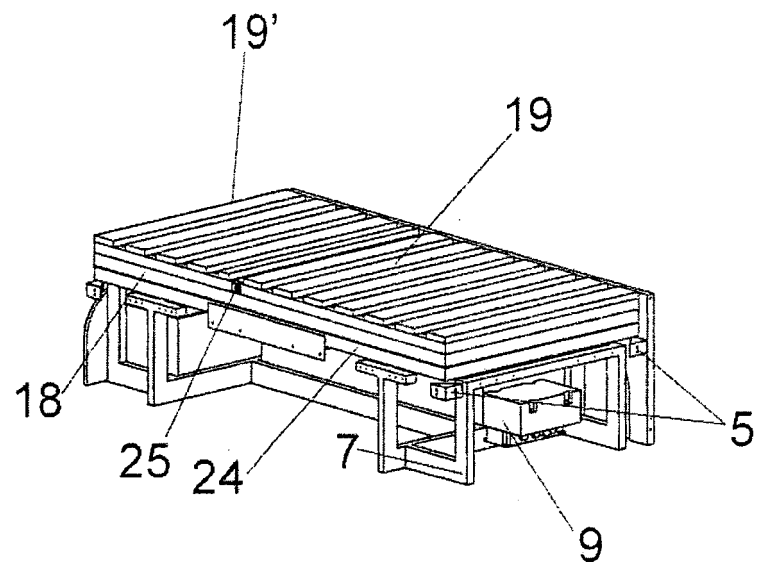


FIG. 3

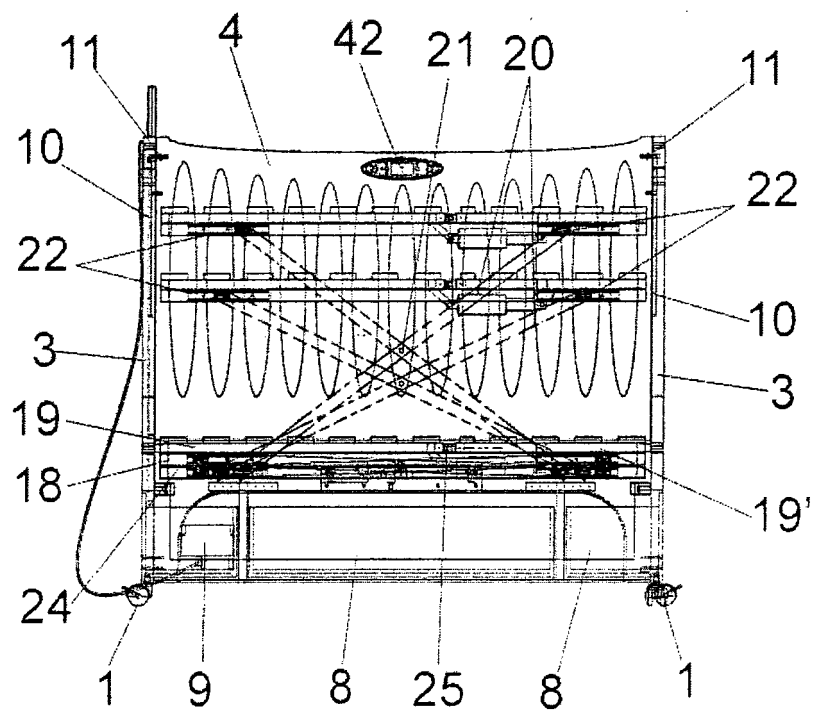
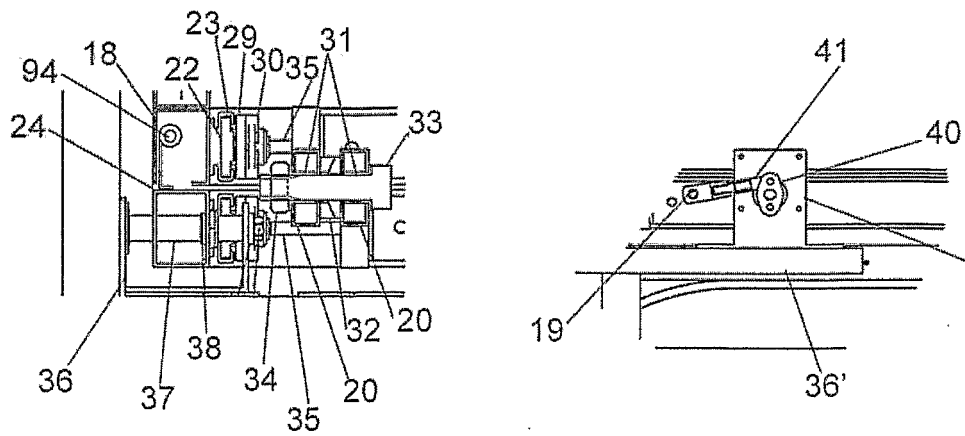
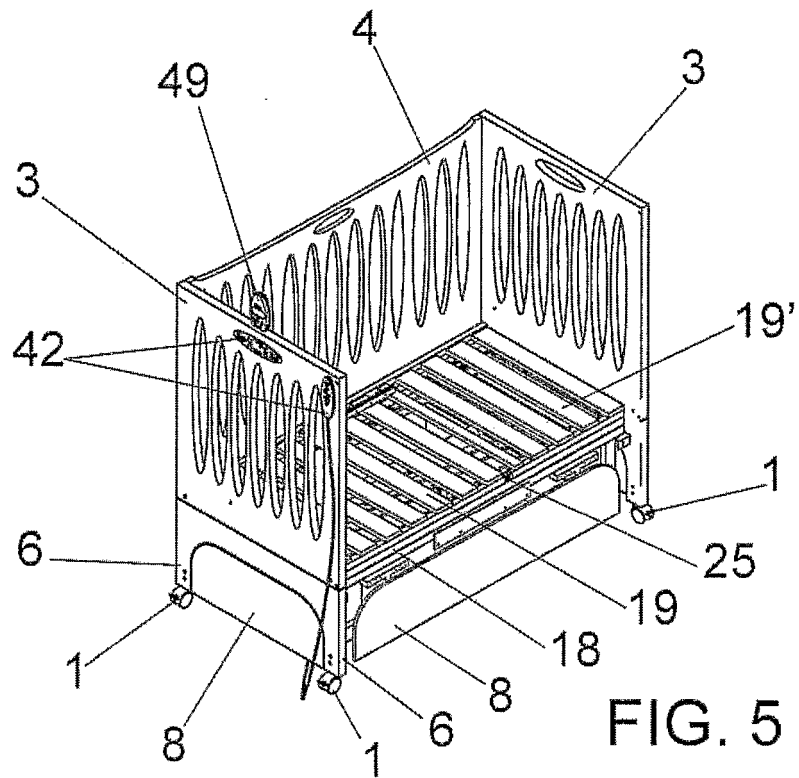
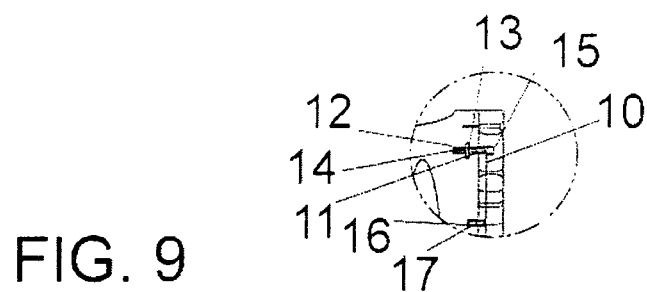
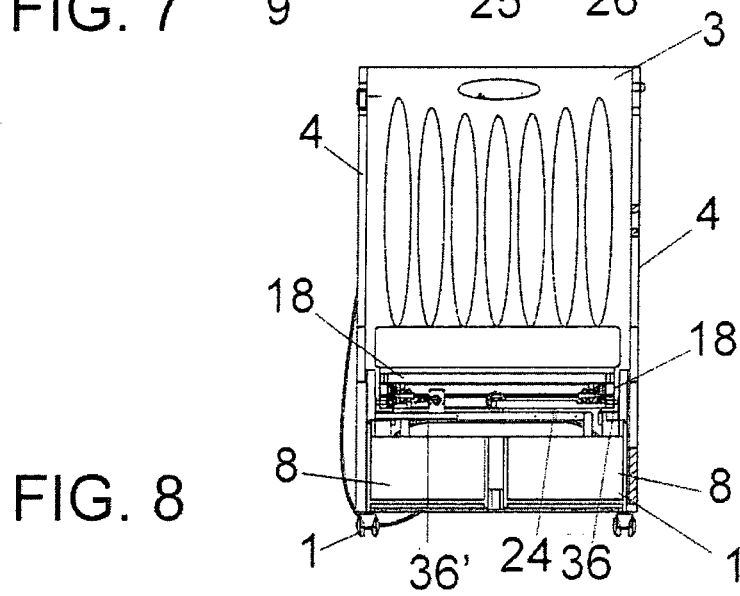
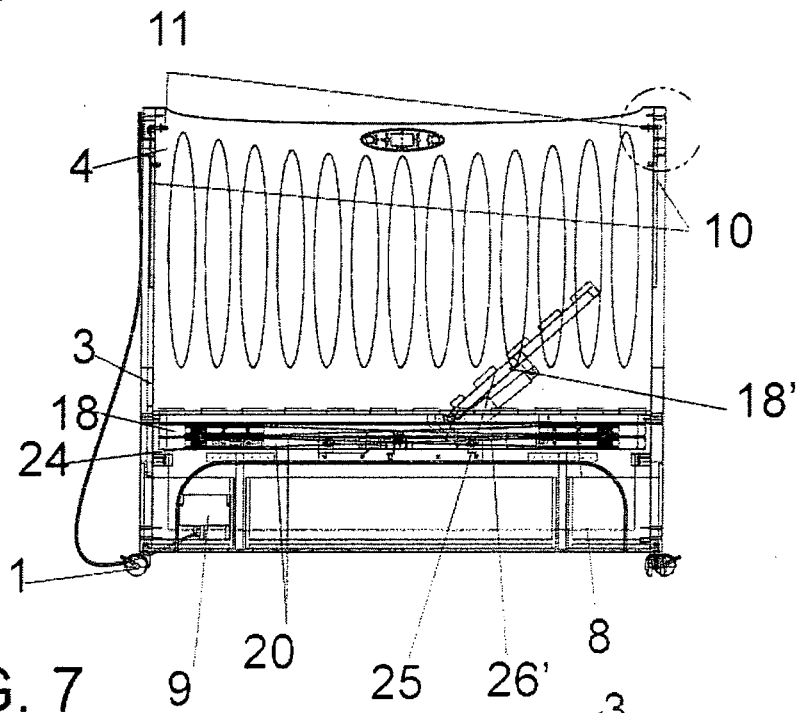


FIG. 4





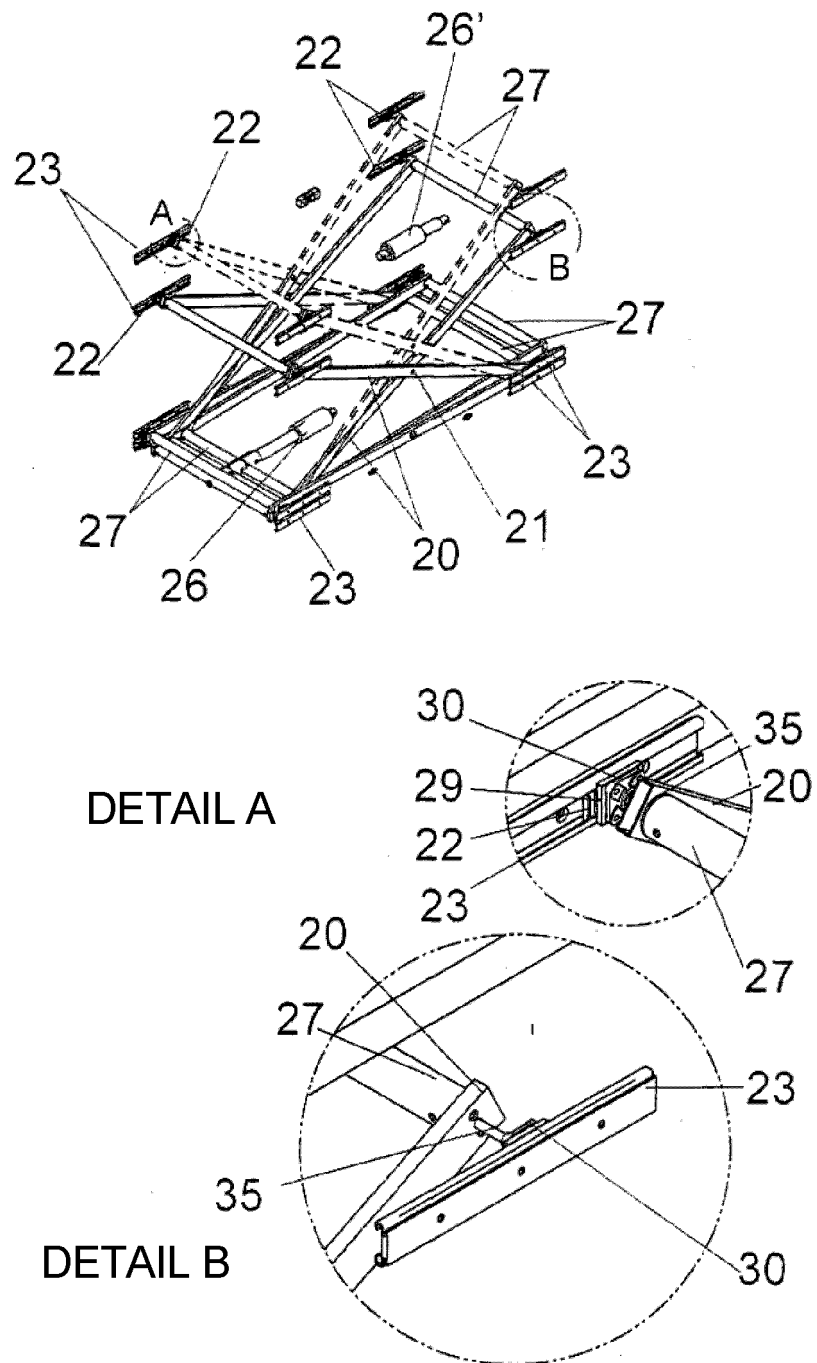


FIG. 10

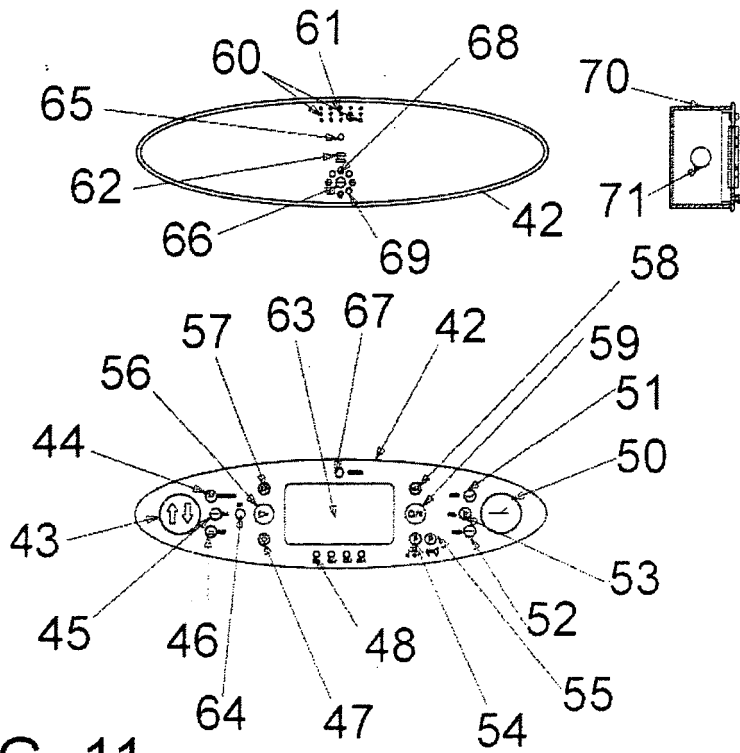


FIG. 11

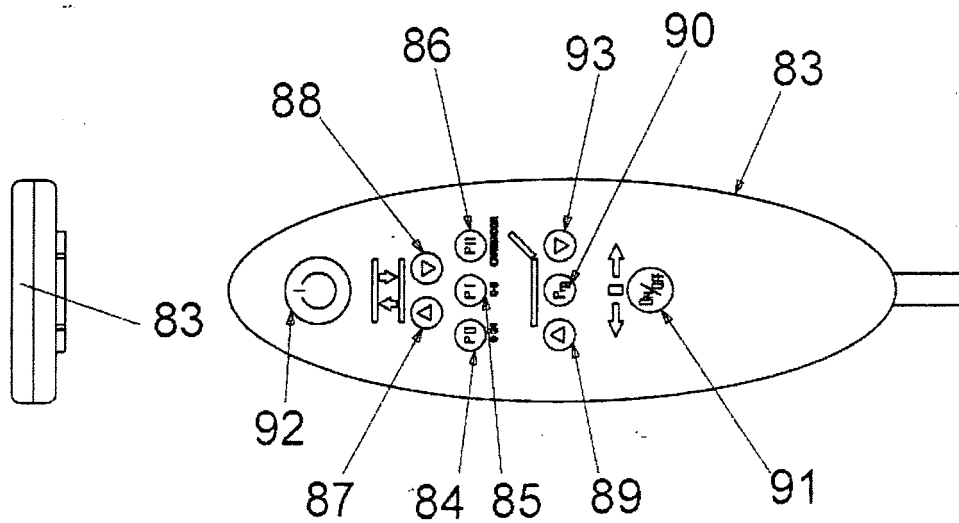


FIG. 12

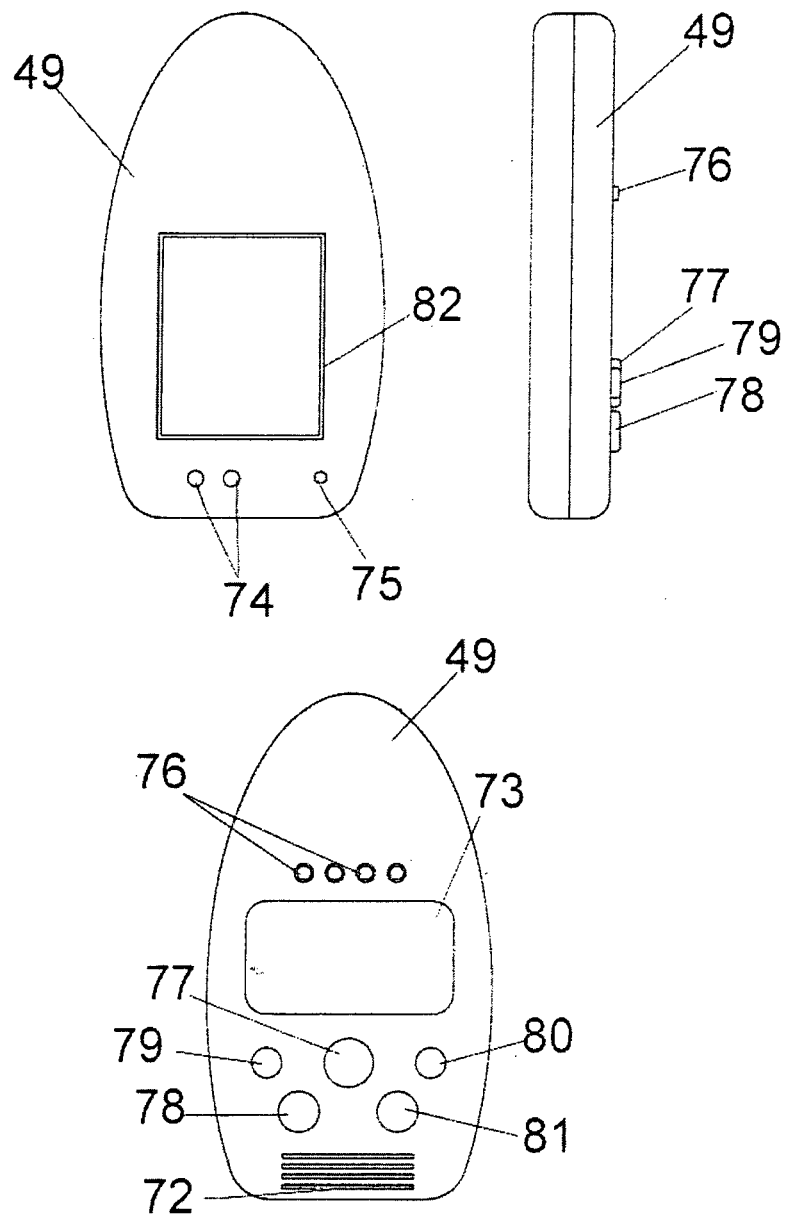


FIG. 13

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ ES 2009/000289

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)

A47D , A47C , A61G , G08B

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)

INVENES, EPODOC, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2429400 A (TECHNIK2 LTD) 28.02.2007, the whole document.	1-11
A	US 4768242 A (LOTURCO et al.) 06.09.1988, the whole document.	1, 3-5
A	US 3686696 A (LANIGAN et al.) 29.08.1972, the whole document.	1, 5, 8
A	DE 29613571 U1 (AKS AKTUELLE KRANKEN UND PFLEG) 24.10.1996, the whole document.	1,4
A	US 2002157180 A1 (KOENIG et al.) 31.10.2002, the whole document.	1, 4
A	US 7146662 B1 (POLLARD et al.) 12.12.2006, figure 1, 3-4	1, 5

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

* Special categories of cited documents:	"I"	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
"A" document defining the general state of the art which is not considered to be of particular relevance.		
"E" earlier document 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)	"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
"O" document referring to an oral disclosure use, exhibition, or other means	"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 documents, such combination being obvious to a person skilled in the art
"P" document published prior to the international filing date but later than the priority date claimed		
	"&"	document member of the same patent family

Date of the actual completion of the international search

22.October.2009 (22.10.2009)

Date of mailing of the international search report

(27/10/2009)

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES 2009/000289

C (continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of documents, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 7240385 B1 (BROWN et al.) 10.07.2007, the whole document.	1, 8
A	EP 0488552 A2 (NESBIT EVANS & CO LTD) 03.06.1992, the whole document.	1, 8
A	EP 1486191 A1 (SANYO ELECTRIC CO) 15.12.2004, the whole document.	1, 8

Form PCT/ISA/210 (continuation of second sheet) (July 2008)

EP 2 292 124 A1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/ ES 2009/000289

Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
GB 2429400 A	28.02.2007	NONE	-----
US 2002157180 A	31.10.2002	US 6684420 B CA 2443974 A WO 02087394 A AU 2002311842 A US 2004244109 A	03.02.2004 07.11.2002 07.11.2002 11.11.2002 09.12.2004
US 4768242 A	06.09.1988	NONE	-----
US 3686696 A	29.08.1972	NONE	-----
DE 29613571 U U	24.10.1996	NONE	-----
EP 0488552 AB	03.06.1992	CA 2055672 AC EP 19910310488 IE 913806 A IE 66590 B GB 2250189 AB AU 639151 B AU 8692891 A ZA 9108664 A CA 2055671 AC IE 913807 A IE 66591 B EP 0498111 AB EP 19910310489 GB 2252495 AB AU 643084 B AU 8700791 A US 5161274 A US 5205004 A JP 6125829 A JP 6142142 A AT 109652 T AT 109651 T DE 69103387 T DE 69103397 T DK 0498111 T DK 0488552 T	29.05.1992 13.11.1991 03.06.1992 24.01.1996 03.06.1992 15.07.1993 04.06.1992 29.07.1992 07.08.1992 12.08.1992 24.01.1996 12.08.1992 13.11.1991 12.08.1992 04.11.1993 13.08.1992 10.11.1992 27.04.1993 10.05.1994 24.05.1994 15.08.1994 15.08.1994 01.12.1994 08.12.1994 24.07.1995 24.07.1995
EP 1486191 A	15.12.2004	WO 03073973 A AU 2003211974 A JP 2003310668 A EP 20030705137 TW 230060 B CN 1638711 A CN 100417368 C US 2005160530 A US 7246389 B	12.09.2003 16.09.2003 05.11.2003 14.02.2003 01.04.2005 13.07.2005 10.09.2008 28.07.2005 24.07.2007

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/ ES 2009/000289

Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
US 7240385 B	10.07.2007	NONE	-----
US 7146662 B	12.12.2006	NONE	-----

Form PCT/ISA/210 (patent family annex) (July 2008)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES 2009/000289

CLASSIFICATION OF SUBJECT MATTER

A47D 9/02 (2006.01)

A47D 9/00 (2006.01)

A47D 7/00 (2006.01)

A47C 19/04 (2006.01)

A61G 7/002 (2006.01)

A61G 7/012 (2006.01)

A47C 20/04 (2006.01)

G08B 21/02 (2006.01)