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**(54) SUPPORT DEVICE FOR BABY'S COMFORT**

BERUHIGENDE UNTERLAGEVORRICHTUNG FÜR BABYS

DISPOSITIF DE SUPPORT À DES FINS DE CONFORT POUR BÉBÉ

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(73) Proprietor: **Piombino, Marco**  
**81100 Caserta (IT)**

(72) Inventor: **Piombino, Marco**  
**81100 Caserta (IT)**

(74) Representative: **Bruni, Giovanni**  
**Laforgia, Bruni & Partners**  
**Corso Duca degli Abruzzi, 78**  
**10129 Torino (IT)**

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## Description

**[0001]** The present invention relates to a supporting device for newborn baby comfort, intended to be used to simulate the newborn baby physical contact with his mother not only during breast-feeding but also in the next months. In particular, the device simulates the newborn baby's mother heartbeat, heat, voice and breath.

**[0002]** In the technical field of the devices for newborn baby comfort there are available ergonomic pillows and bands for both mother and newborn baby, sounding devices for simulating the newborn baby while playing or sleeping. For a better newborn baby growth, pediatricians recommend a continual mother/newborn baby contact also during the first months after the pregnancy, but it usually happens that the mother has to reduce the contact time with her child for different physical, personal and professional reasons.

**[0003]** Document US-A1-2009/0156089 discloses a supporting device with all the technical features set out in the preamble of claim 1.

**[0004]** Aim of the present invention is to provide a solution for the technical problem of increasing the contact time similar to the mother/newborn baby one in order to achieve the maximum comfort for the newborn baby and to relieve the mother in some moments of the day. The device is apt to simulate the mother heartbeat, heat, voice and breath when the newborn baby is rested on the device which is provided with the ergonomic features described in claim 1.

**[0005]** The device is advantageous in that it has reduced dimensions and is shaped as a woman chest/trunk; it is also soft as a human body and can be accommodated on a rocking chair or the same. Another advantage is that it reproduces the mother voice and breath in two modes, i.e. "free ear" and "covered ear". In the "covered ear" position, the newborn baby body and head are rested on the surface of the support with the newborn baby having one free ear and the other one in direct contact with the support exactly as when the newborn baby is rested on the mother breast; otherwise the newborn baby is the "free ear" position. Moreover, it is also reproduced the vibration effect which is felt/perceived by the newborn baby from the direct contact with the mother's rib cage from which sounds and vibrations are transmitted.

**[0006]** These and other advantages will be better highlighted in the following detailed description which refers to the drawing 1/1 describing an absolutely not limiting preferred embodiment of the present invention. In particular:

Fig. 1 shows a tridimensional view of an embodiment of the present invention;

Fig. 2 shows a side view of the inventive device of fig. 1.

**[0007]** Referring to said figures, the device according

to the invention is generally indicated by the reference number 1 and shown in figs. 1 and 2. It comprises a newborn baby ergonomic supporting means 2, at least a supplying system for the electronic devices 3, at least an audio reproducing system 4, 5, 6, at least a leverage system 7, at least a heating means 8, at least an audio, temperature, leverage mechanic motion control/actuation/acquisition system 9. In particular, said audio reproducing system 4, 5, 6 is apt to reproduce the human voice, breath and heartbeat and is characterized in that it comprises a plurality of loudspeakers 4 positioned in the support upper portion with diffusion outside the support in order to reproduce the mother voice, and a plurality of loudspeakers 5, 6 positioned inside the support, so that the emitted sound allows a soft vibration of the outermost layer of the support in order to reproduce the vibrations. Referring to fig. 1, the newborn baby ergonomic structure 2 can have different shapes as for example the woman trunk one, and is characterized by an outer coating portion and a structural inner portion wherein the coating outer portion (approximately 2-3 cm thick) has a consistence similar to the human body epidermis and is realized in soft materials such as for example silicone, resins or others; the inner structural portion is instead realized in materials both apt to give shape to the structure and soft, light and resistant as for example polyurethane foam, polystyrene or others.

**[0008]** In a particular embodiment, said supporting means 2 is provided with safety holding devices for the newborn baby as for example harnesses, bands and the like.

**[0009]** Moreover, referring to fig. 2, said heating means 8 is apt to heat the surface portion of the supporting structure in contact with the newborn baby up to the human physiological body temperature approximately about 36.5°C. For example, the heating means 8 is realized by introducing an electric resistance in the outermost layer of the support, so that the front portion of the supporting surface of the newborn baby on the supporting means 2 is uniformly heated.

**[0010]** In order to reproduce the mother breath, the expansion/shrinkage effect perceived by the newborn baby from the direct contact with the rib cage following the mother breath is reproduced by a leverage system 7 contained in the supporting structure 2, so that the few degrees variation of the levers angle allows to expand and shrink the outer surface of the support 2, preferably synchronously with the audio reproduction.

**[0011]** Finally, said audio temperature, leverage mechanic motion control/actuation/acquisition system 9 is introduced in an easily removable container in the support, and is apt to acquire, store and process the signal so that the heating means 8, the audio reproducing system 4, 5, 6 and the leverage motion 7 are actuated.

**[0012]** In particular, said audio control/actuation/acquisition system 9 comprises an electronic control console, an audio acquisition device as for example a microphone, an elastic band linked to a sensor apt to measure the

volumetric variation of the mother's trunk during breathing, and a device for heartbeat acquisition.

[0013] In a particular embodiment in fig. 2, said previously described electronic devices are supplied by a battery supplying system 3 or are connected directly to the electric mains, wherein the battery has an autonomy of operation of some hours, and it is rechargeable by arranging it in its housing in the support connected to the domestic electric mains.

[0014] The functioning mode of said device allows the synchronous or asynchronous functioning of the audio reproducing system 4, 5, 6, the heating means 8, the motion of the leverage system 7 by means of the audio control/actuation/acquisition system 9.

[0015] In particular, the motion of the leverage system 7 occurs preferably in synchronous with the audio reproducing system 4, 5, 6.

[0016] The above described embodiment is clearly only a not limiting example of the inventive device.

[0017] This device is also advantageous in that it can be realized in different shapes and dimensions; in that it can be housed on different surfaces (rocking one, bed, sofa) and in that it is easily transportable.

## Claims

1. Supporting device for the newborn baby comfort comprising, at least a supplying system for electronic devices (3), at least an audio reproducing system (4, 5, 6), at least a leverage system (7), at least a heating means (8), at least an audio, temperature, leverage mechanic motion control/actuation system (9), said audio reproducing system being apt to reproduce the human voice, breath and heartbeat and comprising: a plurality of loudspeakers (4) with diffusion outside the supporting device in order to reproduce the mother voice; a plurality of loudspeakers (5, 6) positioned inside the supporting device, so that the emitted sound allows a soft rumble/vibration of the outermost layer of the supporting device in order to reproduce the vibrations;

- said heating means (8) being apt to heat the surface portion of the supporting device in contact with the newborn baby;

- said leverage system (7) allowing to expand and shrink the outer surface of the supporting device so that the breath is simulated;

- said audio, temperature, leverage mechanic motion control/actuation system (9) processing the signal so that the heating means (8), the audio reproducing system (4, 5, 6) and the leverage motion are actuated, **characterized in that** said device further comprises a newborn baby ergonomic supporting means (2) and the audio and leverage mechanic acquisition system (9) comprising an electronic control console, an au-

dio acquisition device as for example a microphone and an elastic band linked to a sensor apt to measure the volumetric variation of the mother's trunk during breathing, and a device for heartbeat acquisition, said acquisition system being able to acquire and store data.

2. Supporting device according to claim 1, **characterized in that** the newborn baby supporting means (2) comprises an outer coating portion and an inner structural portion wherein the outer coating portion has a consistence similar to the the human body epidermis as for example silicone, resins or others; the inner structural portion is realized in materials both apt to give shape to the structure and soft, light and resistant as for example polyurethane foam, polystyrene or others.

3. Supporting device according to any one of the preceding claims, **characterized in that** said audio reproducing system comprises a plurality of loudspeakers (4) positioned in the upper portion of the supporting device.

4. Supporting device according to any one of the preceding claims, **characterized in that** said heating means (8) is apt to heat the surface portion of the supporting structure up to the human physiological body temperature.

5. Supporting device according to claim 2, **characterized in that** the heating means (8) is introduced in the outermost coating layer of the supporting device apt to heat uniformly the supporting surface of the newborn baby on the supporting means (2).

6. Supporting device according to any one of the preceding claims, **characterized in that** said audio, temperature, leverage mechanic motion control/actuation/acquisition system (9) and said leverage system (7) are introduced in an easily removable container in the supporting means (2).

7. Supporting device according to any one of the preceding claims, **characterized in that** said leverage system (7) is contained in the supporting means (2).

8. Supporting device according to any one of the preceding claims, **characterized in that** said supplying system for the electronic devices (3) is a battery supplying system (3) or is connected directly to the electric mains.

9. Supporting device according to any one of the preceding claims, **characterized in that** said supporting means (2) is provided with safety holding devices for the newborn baby as for example harnesses, bands and the like and it can be mounted on a rocking

surface or the like.

10. Functioning method of said device according to any one of the preceding claims, **characterized in that** the control/actuation/acquisition system (9) allows the synchronous or asynchronous actuation control of the audio reproducing system. (4, 5, 6), the temperature, the motion of the leverage system (7), wherein the motion of the leverage system (7) occurs preferably in synchronous with the audio reproducing system (4, 5, 6).

#### Patentansprüche

1. Stützeinrichtung für den Komfort des Babys, die zumindest ein Versorgungssystem für elektronische Geräte (3), zumindest ein Audiowiedergabesystem (4, 5, 6), zumindest ein System von Hebeln (7), zumindest Heizmittel (8), zumindest ein Steuersystem/Laufwerk (9) von Audio, Temperatur, mechanische Bewegung der Hebel, aufweist, wobei das besagte Audiowiedergabesystem in der Lage ist, die menschliche Stimme, die Atmung und den Herzschlag zu reproduzieren, und umfassend:

eine Vielzahl von Lautsprechern (4) mit einer Diffusion außerhalb der Stützeinrichtung, um die Stimme der Mutter zu reproduzieren; eine Vielzahl von im Inneren der Stützeinrichtung angeordneten Lautsprechern (5, 6), wobei der ausgesendete Schall ermöglicht ein leichtes Brummen/Vibration der äußersten Schicht der Stützeinrichtung, um die Vibrationen zu reproduzieren;

- wobei die besagten Heizmittel (8) in der Lage sind den Oberflächenanteil der Stützeinrichtung in Kontakt mit dem Baby zu erwärmen;

- wobei das besagte System von Hebeln (7) die Ausdehnung und Schrumpfung der Außenfläche der Stützeinrichtung in einer solchen Weise gestattet, dass die Atmung simuliert wird;

- wobei das besagte Steuersystem/Laufwerk (9) von Audio, Temperatur und mechanische Bewegung der Hebel die Verarbeitung des Signals derart steuert, dass die Heizmittel (8), das Audiowiedergabesystem (4, 5, 6) und die Bewegung der Hebel, aktiviert werden, **dadurch gekennzeichnet, dass**

die besagte Einrichtung ferner ein Mittel (2) zur ergonomischen Stütze (2) für das Baby umfasst und das Erfassungssystem (9) von Audio und das Mechanismus der Hebel eine elektronische Steuerkonsole, eine Audi-

oerfassungsvorrichtung wie beispielsweise ein Mikrofon und ein elastisches Band mit einem Sensor umfasst, der in der Lage ist, die Messung der Volumenänderung des Oberkörpers der Mutter während der Atmung durchzuführen, und eine Vorrichtung zur Erfassung des Herzschlags, wobei das besagte Erfassungssystem in der Lage ist, Daten zu erfassen und zu speichern.

2. Stützeinrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Stützmittel (2) des Babys eine äußere Beschichtung und einen inneren Strukturtteil umfassen, wobei die äußere Beschichtung eine ähnliche der Epidermis des menschlichen Körpers Konsistenz, wie beispielsweise Silikon, Harzen oder dergleichen, aufweist; wobei der innere Strukturtteil aus Materialien hergestellt wird, die in der Lage sind, eine Gestalt zur Struktur zu geben und weich, leicht und widerstandsfähig sind, wie aus Polyurethan-Schaum, Polystyrol oder dergleichen.

3. Stützeinrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das besagte Audiowiedergabesystem eine Vielzahl von im oberen Teil der Stützeinrichtung angeordneten Lautsprechern (4) umfasst.

4. Stützeinrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die besagten Heizmittel (8) in der Lage sind, den Oberflächenteil der Trägerstruktur bis auf die physiologische Körpertemperatur zu erwärmen.

5. Stützeinrichtung nach Anspruch 2, **dadurch gekennzeichnet, dass** die Heizmittel (8) in der äußersten Beschichtungsschicht der äußeren Stützeinrichtung derart eingeführt werden, dass sie die Oberfläche der Trägerfläche des Babys auf der Stützeinrichtung (2) gleichmäßig erwärmen.

6. Stützeinrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das besagte Steuer/Antrieb/Erfassungssystem (9) von Audio, Temperatur, mechanischer Bewegung der Hebel und das besagte System von Hebeln (7) in einen einfach entfernbaren Behälter in den Stützmitteln (2) eingeführt wird.

7. Stützeinrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das genannte System von Hebeln (7) in den Stützmitteln (2) enthalten ist.

8. Stützeinrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das besagte Versorgungssystem für elektronische Geräte (3) entweder ein Versorgungssystem (3) einer

Batterie ist, oder es ist direkt mit dem Netz verbunden.

9. Stützeinrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die besagten Stützmittel (2) mit Anschlagvorrichtungen für die Sicherheit des Babys, wie zum Beispiel Bändern, Gurten und dergleichen versehen sind und sie können an einer schaukelnde Fläche oder dergleichen angebracht werden. 5
10. Verfahren zum Betrieb der besagten Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Steuer/Antrieb/Erfassungssystem (9) die synchrone oder asynchrone Antriebssteuerung des Audiowiedergabesystem ermöglicht. 10

#### Revendications

1. Dispositif de support pour le confort des bébés, comprenant au moins un système d'alimentation pour des dispositifs électroniques (3), au moins un système audio de reproduction (4, 5, 6), au moins un système de leviers (7), au moins un moyen de chauffage (8), au moins un système de contrôle/commande (9) audio, de la température, du mouvement mécanique des leviers, ledit système de reproduction audio pouvant reproduire la voix humaine, la respiration et le battement de coeur, et comprenant: une pluralité de haut-parleurs (4) avec diffusion à l'extérieur du dispositif de support, de manière à reproduire la voix de la mère; une pluralité de haut-parleurs (5, 6) positionnés à l'intérieur du dispositif de support, de sorte que le son émis permet un léger grondement/vibration de la couche la plus externe du dispositif de support afin de reproduire les vibrations; 20
- lesdits moyens de chauffage (8) étant capable de chauffer la partie de surface du dispositif de support en contact avec le bébé; 25
- ledit système de leviers (7) permettant l'expansion et la contraction de la surface extérieure du dispositif de support de telle manière à simuler la respiration; 30
- ledit système de commande/entraînement (9) audio, de la température et du mouvement mécanique des leviers traitant le signal, de telle sorte que les moyens de chauffage (8), le système de reproduction audio (4, 5, 6) et le déplacement des leviers sont activés, **caractérisé en ce que** ledit dispositif comprend en outre un moyen de support ergonomique (2) pour le bébé, et le système d'acquisition (9) audio et du mécanisme des leviers comprend une console électronique de commande, un dispositif d'acquisition audio tel qu'un microphone et une bande élastique re- 35

liée à un capteur, pour mesurer la variation volumétrique du torse de la mère au cours de la respiration, et un dispositif pour l'acquisition du rythme cardiaque, ledit système d'acquisition étant capable d'acquérir et de stocker des données.

2. Dispositif de support selon la revendication 1, **caractérisé en ce que** les moyens de support (2) du bébé comprennent une partie du revêtement externe et un élément de structure interne, dans lequel la partie de la couche externe a une consistance similaire à celle de l'épiderme du corps humain tel que par exemple du silicone, des résines ou similaires; la pièce de structure interne est faite de matériaux capables de donner forme à la structure et d'être souple, légers et résistants, tel que de la mousse de polyuréthane, du polystyrène ou similaire. 40
3. Dispositif de support selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ledit système de reproduction audio comprend une pluralité de haut-parleurs (4) positionnés dans la partie supérieure du dispositif de support. 45
4. Dispositif de support selon l'une quelconque des revendications précédentes, **caractérisé en ce que** lesdits moyens de chauffage (8) sont capables de chauffer la partie de surface de la structure de support jusqu'à la température physiologique du corps humain. 50
5. Dispositif de support selon la revendication 2, **caractérisé en ce que** lesdits moyens de chauffage (8) sont introduits dans la couche de revêtement plus externe du dispositif de support, capable de chauffer uniformément la surface de soutien du bébé sur le moyen de support (2). 55
6. Dispositif de support selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ledit système de commande/entraînement/acquisition (9) audio, de la température, du mouvement mécanique des leviers et ledit système de leviers (7) sont introduits dans un récipient facilement amovible dans le moyen de support (2).
7. Dispositif de support selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ledit système de leviers (7) est contenu dans le moyen de support (2).
8. Dispositif de support selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ledit système d'alimentation pour des appareils électroniques (3) est un système d'alimentation électrique (3) d'une batterie, ou il est directement relié au réseau électrique.

9. Dispositif de support selon l'une quelconque des revendications précédentes, **caractérisé en ce que** lesdits moyens de support (2) sont munis de dispositifs d'arrêt de sécurité pour le bébé, tels que des sangles, des ceintures et similaires, et peuvent être montés sur une surface à bascule ou similaire. 5

10. Procédé de fonctionnement dudit dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le système de commande/entraînement/acquisition (9) permet la commande d'entraînement synchrone ou asynchrone du système de reproduction audio. 10

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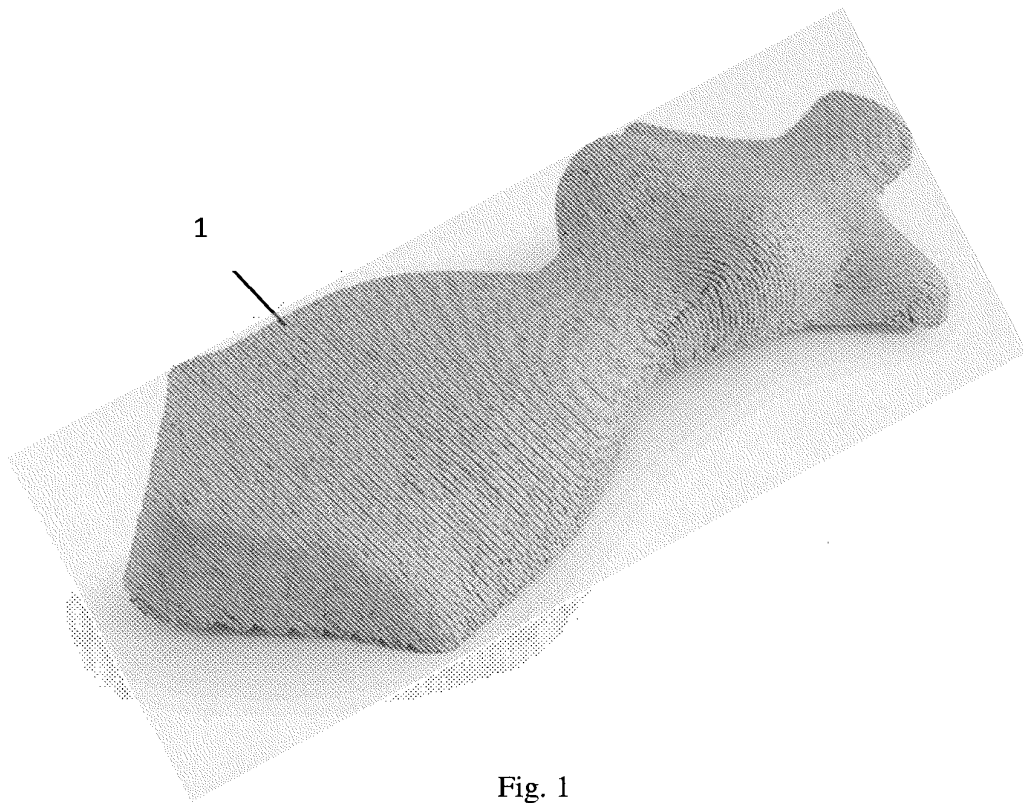


Fig. 1

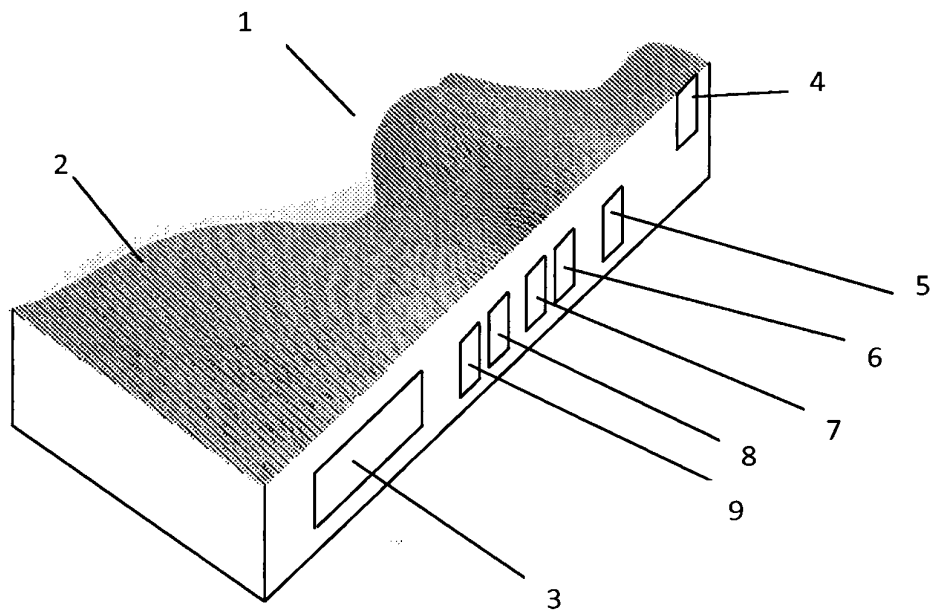


Fig. 2

**REFERENCES CITED IN THE DESCRIPTION**

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