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(54) **MASSAGER**

(57) **Problem**

The invention seeks an alternative to known apparatus which provides the same or similar effects or is more cost-effective.

Solution

Massager (10)
comprising
a massage head (11) having a driveshaft,
an electric, preferably direct-current motor (12) for driving the head (11), and a pushbutton (13), preferably of silicon, for toggling the motor (12) on and off, respectively, characterized in that
the driveshaft mechanically couples the head (11) and motor (12) such that, when the motor (12) is on, the head (11) revolves unidirectionally at a steady rotational speed of preferably 28 revolutions per minute.

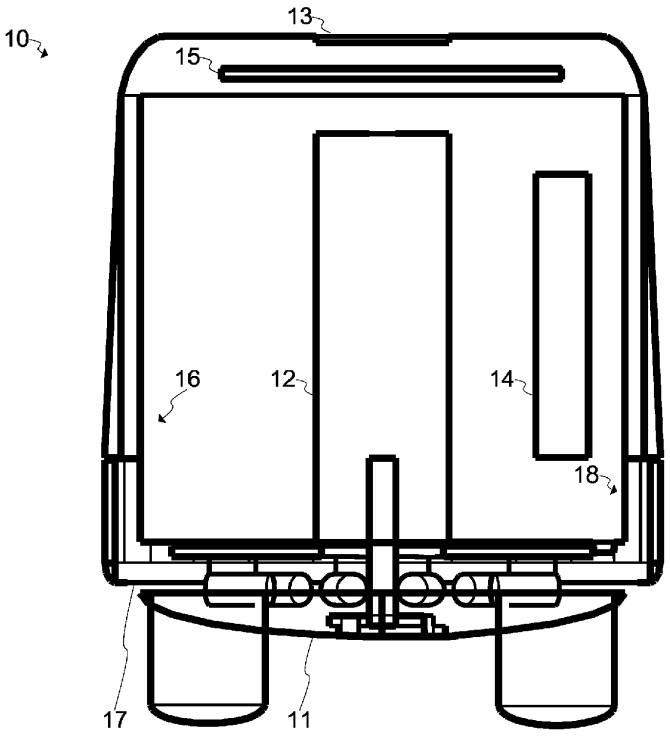

Fig. 3

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Description

Technical Field

[0001] The invention relates to a massager as per the first portion of Claim 1.

Background Art

[0002] Pediatric massage is a complementary and alternative treatment that uses massage therapy for children and adolescents, such as for improved gastrointestinal functioning and relief of gas or constipation. By way of example, NPL1 suggests abdominal massage twice a day as an intervention helping to prevent gastric residual volume excess and abdominal distension in enterally fed preterm infants.

[0003] PTL1 discloses an abdominal massage machine driven by an electric motor.

Summary of invention

[0004] The invention as claimed is hereinafter disclosed in such a way that the technical problem with which it deals can be appreciated and the solution can be understood.

Technical Problem

[0005] The invention seeks an alternative to known apparatus which provides the same or similar effects or is more cost-effective.

Solut ion t o Problem

[0006] The problem is solved by a massager as per the second portion of Claim 1

Advantageous effect of invention

[0007] A massager as per the invention supports natural bowel movement by revolving unidirectionally at a rotational speed that is recommended for manual abdominal massage. Also, its preferred weight of approximately 300 g corresponds to the finger pressure of manual abdominal massage used in infants to promote digestion and relieve colic. By applying appropriate manual pressure, the device can also be used by adults for massaging body regions other than the abdomen.

[0008] For ease of use, the device is dimensioned for operation - even by small-handed users - via a single button located on its top. A time-controlled deactivation reminds the user of taking breaks to avoid overstressing the infant or body region to which the massager is applied.

[0009] In a preferred embodiment, an integrated battery management system helps to prevent overcharging and deep discharging. The associated motor may be embedded in a plastic mat for noise reduction.

[0010] Advantageously, the massager can be heated, further promoting digestion or relaxation of muscle when used on body regions other than the abdomen.

[0011] Preferably, a net is affixed to the housing by means of a left-hand threaded ring, preventing the ring from unscrewing due to the unidirectional rotation of the massage head during operation. Also, detachment of the net by means of the ring allows for easy cleaning.

Brief description of drawings

[0012]

Figure 1 is a side view of the massager.
Figure 2 is a top view of the massager.
Figure 3 is a longitudinal section of the massager.
Figure 4 is a bottom view of the massager.
Figure 5 is a partially transparent bottom view of the massager.

Description of embodiments

[0013] Figure 1 illustrates a massager (10) encased in a cylindrical housing having a diameter of 84 mm and height of 100 mm. As may be gathered from Figure 2, a silicon pushbutton (13) is integrated in the housing's topside. At a first press of that pushbutton (13), the massage head (11 - Figure 1) starts to rotate; at a second press, a heater is activated in addition to the rotation; and at a third press, the massager (10) is switched off again. Upon 10 minutes of continuous operation, the massager (10) switches off automatically.

[0014] By pressing the pushbutton (13) for three seconds, a transport mode or parental lock may be enabled or disabled, respectively. If enabled, this lock prevents the massager (10) from being switched on accidentally.

[0015] In a preferred embodiment, the pushbutton (13) consists of silicone and is illuminated from below using colored LEDs that serve as a status indicator, wherein purple and blue light designates a massage operation being in progress with or without heating, respectively; a flashing green light designates charging being in progress; and a steady green light designates the battery (14 - Figure 3) being fully charged.

[0016] Advantageously, such battery takes the form of a Li-Ion battery (14) having a voltage of 3.7 V and capacity of at least 2,000 mAh. In such embodiment, the capacity of the battery (14) allows for an operating time of approximately 1 h with heater enabled and approximately 20 h with heater disabled. To preserve battery (14) power, the massager (10) shuts down upon lapse of a predetermined timespan such as 10 minutes. The battery (14) may be recharged via a type-B micro USB port (16) integrated laterally into the housing and managed by a mainboard (15) located between the motor (12) and pushbutton (13).

[0017] In the present embodiment, the motor (12) takes the form of a DC electric motor (12) having a fixed transmission that causes the massage head (11 - Figure 4) to revolve unidirectionally at a steady rotational speed of preferably 28 revolutions per minute. Said head (11) is mounted on the shaft and configured to rotate in a clockwise direction when viewed from above.

[0018] As is best seen in Figure 5, the heater comprises twelve incandescent bulbs arranged beneath the head (11 - Figure 4) and aligned toward its center. A controller arranged on the mainboard (15 - Figure 3) and corresponding temperature sensor are configured such that the heater heats the head (11) to a temperature between 38 °C and 40 °C.

[0019] Not depicted, a net or other textile covers the head (11) and is detachably affixed to a ring screwed to the housing by means of a left-hand thread. An associated circuit breaker (18) is configured such that the massager (10) is disabled while the textile is detached.

Industrial applicability

[0020] The invention is applicable, among others, throughout the medical and infant care industries.

Reference signs list

[0021]

10	Massager
11	Head
12	Motor
13	Pushbutton
14	Battery
15	Mainboard
16	Charging connection
17	Circuit board
18	Circuit breaker

Citation list

[0022] The following documents are cited hereinbefore.

Patent literature

[0023] PTL1: US 1899208 A (DANIEL HAYES MURPHY) 28.02.1933

Non-patent literature

[0024] NPL1: TEKGÜNDÜZ, Kadir Serafettin, et al. Effect of abdomen massage for prevention of feeding intolerance in preterm infants. Italian journal of pediatrics. 2014, vol.40, no.1, p.89.

Claims

1. Massager (10)
comprising
a massage head (11) having a driveshaft,
an electric, preferably direct-current motor (12) for driving the head (11), and a pushbutton (13), preferably of silicon, for toggling the motor (12) on and off, respectively,
characterized in that
the driveshaft mechanically couples the head (11) and motor (12) such that, when the motor (12) is on, the head (11) revolves unidirectionally at a steady rotational speed of preferably 28 revolutions per minute.

2. Massager (10) as per Claim 1
wherein
the head (11) and motor (12) are arranged such that, when viewed along the driveshaft, the head (11) revolves clockwise.

3. Massager (10) as per Claim 1 or Claim 2
having
a rechargeable battery (14) for supplying the motor (12).

4. Massager (10) as per Claim 3
having
a mainboard (15), preferably arranged between the motor (12) and switch, including a battery management system for managing the battery (14).

5. Massager (10) as per Claim 3 or Claim 4
having
a charging connection (16) such as a universal serial bus.

6. Massager (10) as per any of the previous claims
having
a circuit board (17) bearing a preferably electric heater, wherein the massager (10) is configured such that the pushbutton (13), if pressed when the motor (12) is running, further activates the heater.

7. Massager (10) as per Claim 6
wherein
the mainboard (15) further bears a temperature sensor and is configured such that the heater heats the head (11) to a temperature between 38 °C and 40 °C.

8. Massager (10) as per any of the preceding claims
wherein
the heater comprises multiple, preferably twelve, incandescent bulbs arranged beneath the head (11).

9. Massager (10) as per any of the preceding claims
having

a preferably plastic mat encasing the motor (12).

10. Massager (10) as per any of the preceding claims having
a textile, preferably a net, covering the head (11).

11. Massager (10) as per Claim 10
having
a ring attached to the housing, wherein the textile is detachably affixed to the ring.

12. Massager (10) as per Claim 11
wherein
the ring is screwed to the housing by means of a left-hand thread.

13. Massager (10) as per Claim 11 or Claim 12
having
a circuit breaker (18) configured such that the massager (10) is disabled while the textile is detached.

14. Massager (10) as per any of the preceding claims
wherein
the massager (10) is configured such that the massager (10) is disabled upon lapse of a predetermined timespan such as 10 minutes.

15. Massager (10) as per any of the preceding claims
having
preferably polychromatic light-emitting diodes beneath the switch for illuminating the pushbutton (13) depending on an operating mode of the massager (10).

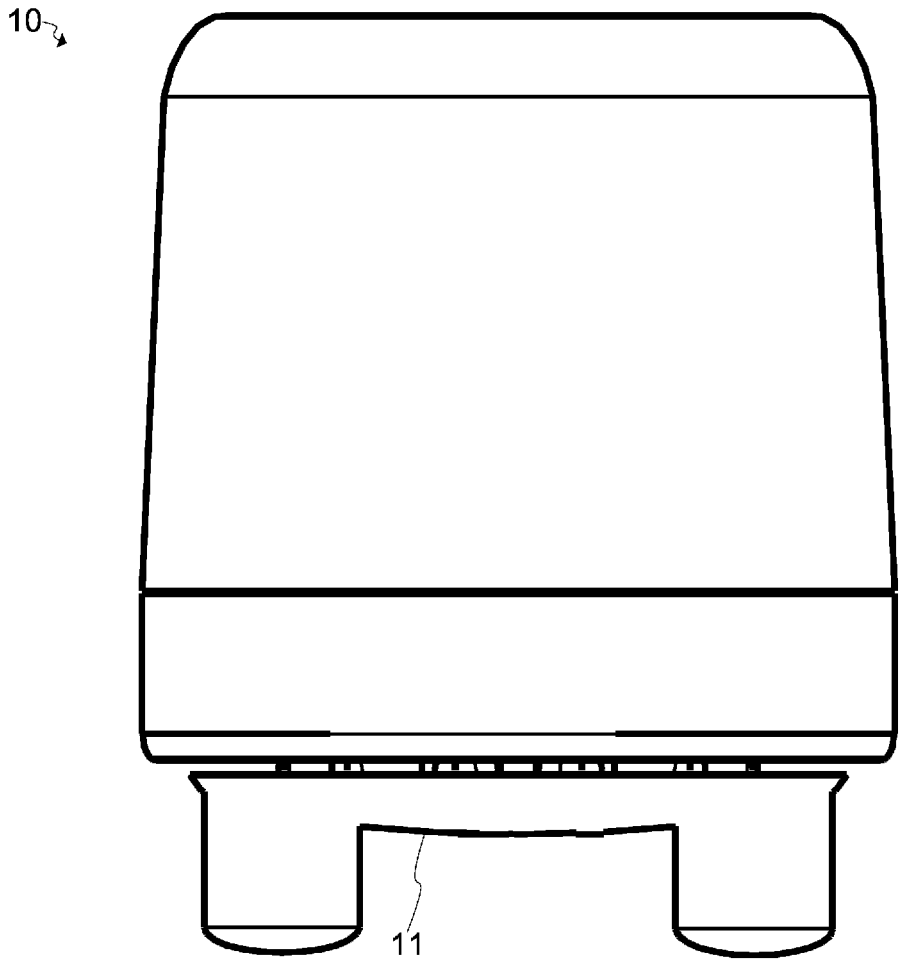

Fig. 1

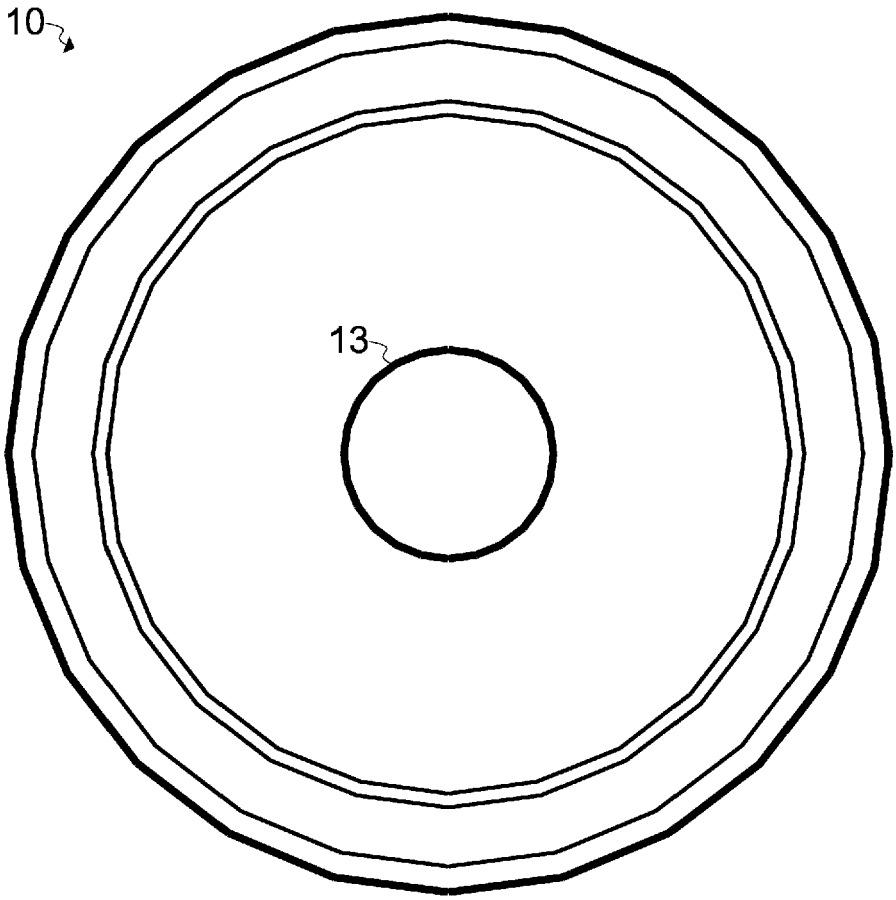

Fig. 2

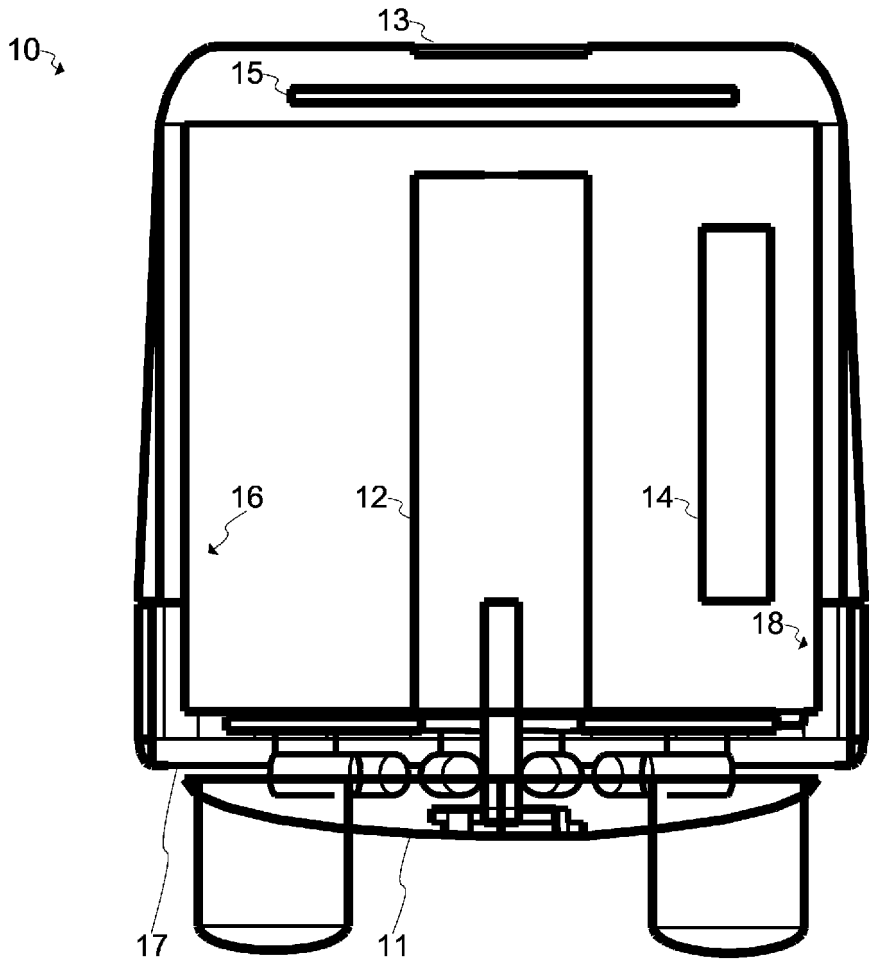

Fig. 3

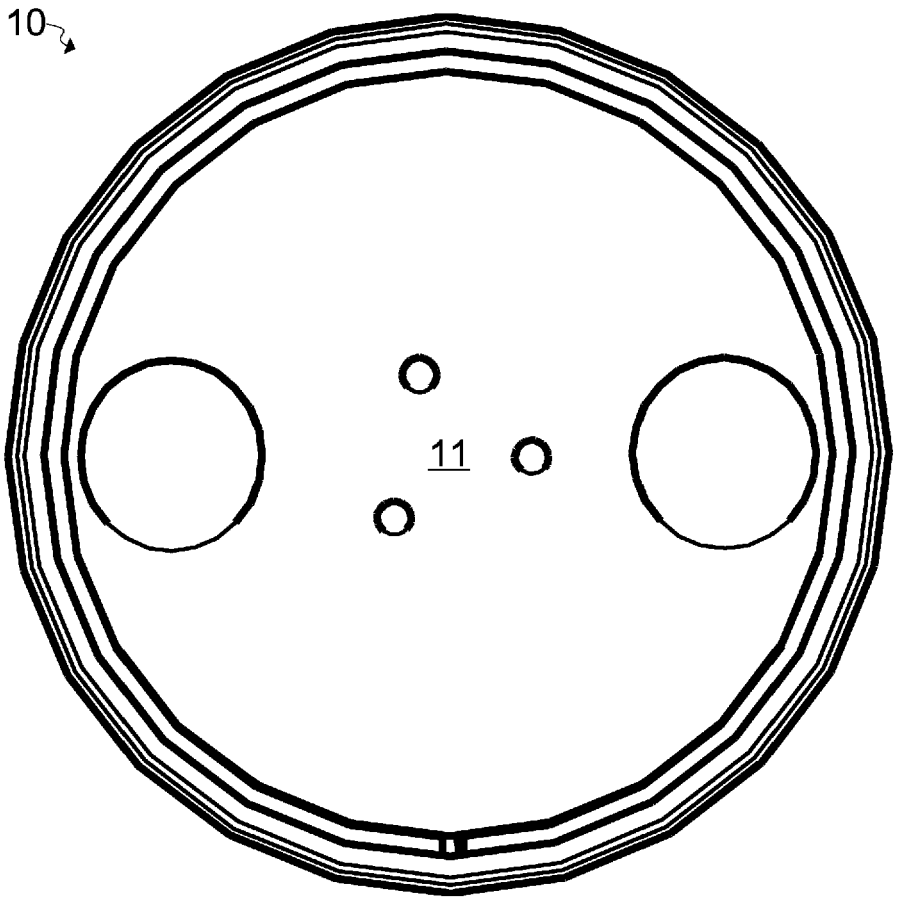

Fig. 4

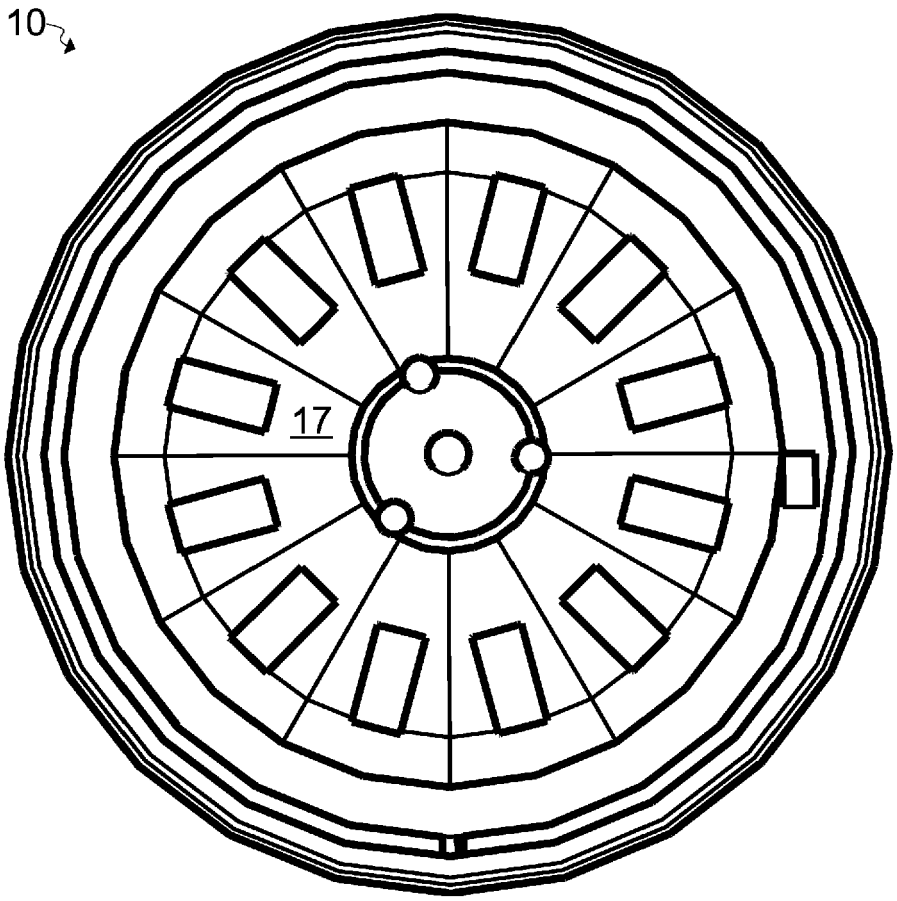

Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 19 17 1475

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2003/125648 A1 (LEASON WENDY ZELLER [US] ET AL) 3 July 2003 (2003-07-03) * paragraphs [0028] - [0056]; figures *	1-6,8-15	INV. A61H15/00
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X	CN 106 420 305 A (LIN LIFANG) 22 February 2017 (2017-02-22) * paragraphs [0009] - [0014]; figures *	1,2,6	
X	US 5 063 911 A (TERANISHI AKIHIKO [JP]) 12 November 1991 (1991-11-12) * columns 3-15; figures *	1,2,9-13	
X	EP 2 705 823 A1 (ZIMMERMANN RONALD [AT]) 12 March 2014 (2014-03-12) * paragraphs [0035] - [0046]; figures *	1,10	
X,D	US 1 899 208 A (HAYES MURPHY DANIEL) 28 February 1933 (1933-02-28) * pages 1,2; figures *	1,10	TECHNICAL FIELDS SEARCHED (IPC) A61H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	5 November 2019	Teissier, Sara

CATEGORY OF CITED DOCUMENTS

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05-11-2019

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 1899208 A, DANIEL HAYES MURPHY **[0023]**

Non-patent literature cited in the description

- **TEKGÜNDÜZ, KADIR SERAFETTIN et al.** Effect of abdomen massage for prevention of feeding intolerance in preterm infants. *Italian journal of pediatrics,* 2014, vol. 40 (1), 89 **[0024]**