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(54) Title: ERGONOMIC BACK PILLOW, ERGONOMIC LEG SUPPORT, AND ERGONOMIC FULL BODY SLEEP SUPPORT SYSTEM

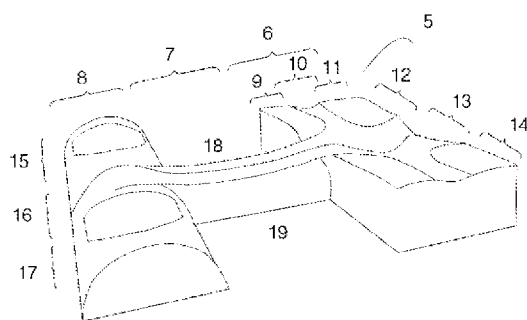


FIG. 5

(57) Abstract: An ergonomic full body sleep support system includes an ergonomic back pillow and an ergonomic leg support for global musculoskeletal alignment and correction. The ergonomic back pillow supporting a global neutral spinal pelvic alignment of the head, neck, torso, and hip, consists of three segments including a transverse head and upper cervical supporting pillow, a transverse lumbar supporting segment, a longitudinal lower cervical and thoracic supporting segment aligned to the longitudinal centerlines of the other two segments, forming a longitudinally symmetrical assembly, a left cut-out and right cut-out to support a range of sleeping positions from supine to lateral sleep. An ergonomic leg support to elevate and facilitate leg venous return consists of a transverse lower portion, longitudinal upper left and right wings, and a cut-out. Ergonomic full body sleep support system provides a pragmatic solution to accommodate global neutral musculoskeletal alignment, facilitate the associated biological functions and sleep comfort.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER		
IPC: A47G 9/10 (2023.01); B68G 7/06 (2023.01); <i>A47C 20/00</i> (2023.01); <i>A47C 27/00</i> (2023.01); <i>A47C 27/14</i> (2023.01) CPC: A47G 9/109 ; A47G 9/10 ; <i>A47C 20/00</i> ; <i>A47C 27/00</i> ; <i>A47C 27/14</i> ; <i>A47C 27/144</i> ; <i>A47G 2009/1018</i> ; <i>B68G 7/06</i>		
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) See Search History Document		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched See Search History Document		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) See Search History Document		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 2023/0180942 A1 (WALKER) 15 June 2023 (15.06.2023) Figures 1, 2A, 16; Paragraphs 0018, 0073, 0082, 0097, 0101, 0119	1-2, 4-5 3, 6, 10-11
Y	US 2023/0148771 A1 (VILSONE) 18 May 2023 (18.05.2023) Paragraph 0053	3
Y	US 6,093,468 A (TOMS ET AL.) 25 July 2000 (25.07.2000) Column 3, Lines 33-36; Column 7, Lines 39-46	6
X Y	US 3,626,526 A (VIEL) 14 December 1971 (14.12.1971) Figures 9-10; Column 1, Lines 13-27; Column 1, Lines 51-63; Column 2, Lines 13-14; Column 2, Lines 69-70; Column 3, Lines 53-56; Column 3, Lines 61-62; Column 5, Lines 28-30	7-9 10-11
A	US 2020/0337479 A1 (ZUREK) 29 October 2020 (29.10.2020) Entire Document	1-11
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "D" document cited by the applicant in the international application "E" earlier application or patent 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) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" 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 "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 "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 such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 18 March 2025 (18.03.2025)		Date of mailing of the international search report 07 April 2025 (07.04.2025)
Name and mailing address of the ISA/US COMMISSIONER FOR PATENTS MAIL STOP PCT, ATTN: ISA/US P.O. Box 1450 Alexandria, VA 22313-1450 UNITED STATES OF AMERICA		Authorized officer SHANE THOMAS
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2024/051159

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,479,667 A (NELSON ET AL.) 02 January 1996 (02.01.1996) Entire Document	1-11

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.: **12, 13**
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I: Claims 1-6 are directed toward an ergonomic back pillow to support a global neutral spinal pelvic alignment of the head, neck, torso, and hip.

Group II: Claims 7-11 are directed toward an ergonomic leg support to elevate the legs and facilitate their venous return.

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Group I include an ergonomic back pillow to support a global neutral spinal pelvic alignment of the head, neck, torso, and hip: comprising three segments of a transverse head and upper cervical supporting pillow, a longitudinal lower cervical and thoracic supporting segment, and a transverse lumbar supporting segment, wherein the longitudinal centerline of said longitudinal lower cervical and thoracic supporting segment is aligned to the longitudinal centerlines of said transverse head and upper cervical supporting pillow and said transverse lumbar supporting segment, forming a longitudinally symmetrical assembly; and comprising a left cut-out and a right cut-out surrounded by said three segments for placing the shoulder and arms, and for rolling from the supine to the lateral sleeping position; and wherein the longitudinal center portion of said transverse head and upper cervical supporting pillow, the entirety of said longitudinal lower cervical and thoracic supporting segment, and the longitudinal center portion of said transverse lumbar supporting segment, form an ergonomic supine sleep entity with dimension and profile, when compressed under the body weight, provide said neutral spinal pelvic alignment, an elevated head relative to the heart, a mandible-cervical angle for open airway and minimal snoring, an open shoulder and chest, and a uniform contact pressure on the body parts in the supine sleeping position; and wherein the longitudinal left and right portions of said transverse head and upper cervical supporting pillow, and the longitudinal left and right portions of said transverse lumbar supporting segment, form an ergonomic lateral sleep entity with dimension and profile, when compressed under the body weight, provide said neutral spinal pelvic alignment, an elevated head relative to the heart, an open shoulder and chest, and a uniform contact pressure on the body parts in the lateral sleeping positions; and wherein the top and side profiles of said ergonomic back pillow has a smooth, gradual and natural transition from said supine sleep entity to said lateral sleep entity, supporting a range of sleeping positions from the supine to the lateral sleep, which are not present in Group II.

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

Group II include an ergonomic leg support to elevate the legs and facilitate their venous return, comprising: a transverse lower portion to elevate the legs when lying straight in the supine and lateral sleeping positions; and a longitudinal upper left wing and a longitudinal upper right wing above said transverse lower portion for the elevation and side support of the legs to bend up sideways and anchor in the lateral sleeping positions; and a cut-out surrounded by said transverse lower portion, said longitudinal upper left wing and said longitudinal upper right wing for placing the hip and upper thighs, which are not present in Group I.

The common technical features of Groups I and II are an ergonomic support; lateral sleeping positions.

These common technical features are disclosed by US 2023/0148771 A1 (Vilsons). Vilsons discloses an ergonomic support (ergonomic support for sleeping; paragraph [0018]); lateral sleeping positions (side sleeping; paragraph [0017]).

Since the common technical features are previously disclosed by the Vilsons reference, the common features are not special and so Groups I and II lack unity.

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

- Remark on Protest**
- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
 - The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
 - No protest accompanied the payment of additional search fees.