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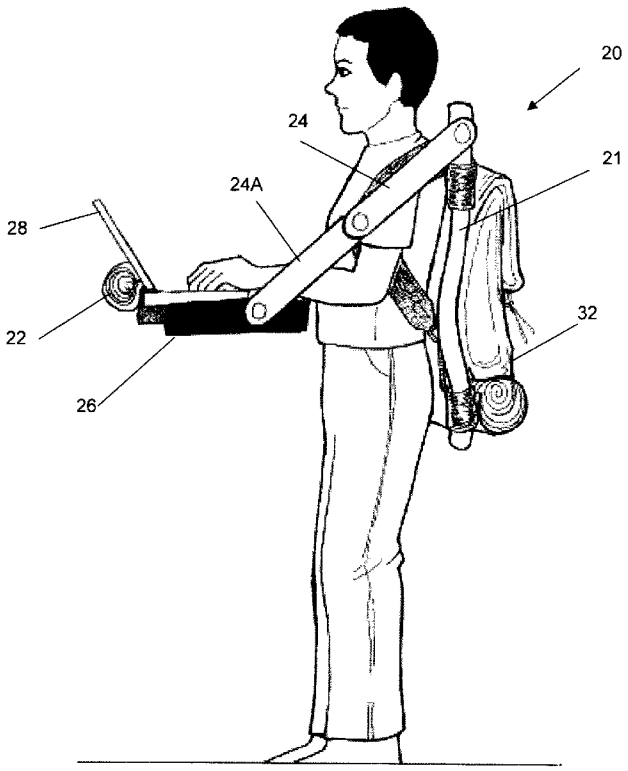
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(54) Title: FRAME FOR PORTABLE COMPUTER CARRIER

Fig. 1



(57) Abstract: The present invention provides a frame [20] with an integrated portable computer case [22] affixed to computer base [26] whereby a pair of parallel adjustable arms [24] is integrated to the frame [20]. A shoulder strap back frame pivots the other end of arms [24], said arms are provided with extendible forearms [24A]. When in need, the forearm [24A] is extended and the arm [24] swiveled to the front and the base holder [28] is rotated so that the computer carrier case [22] is swiveled from storage mode to the front of user. The base slider [30] can be adjusted horizontally accordingly for the user desired view. As such, the invention becomes portable, accessible and comfortable for use in sitting or standing position. The user can bring portable computer to the front and no external support is required as the frame [20] structure provides support itself. The frame [20] can be affixed with backpack carrier [32] for additional storage.

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FRAME FOR PORTABLE COMPUTER CARRIER

The present invention relates to an external frame for backpack, more particularly to a frame with an integrated front swivelling portable computer carrier case.

BACKGROUND ART

Travelers and commuters have long used backpacks, bags and luggage to carry various items. As technology advances, there are requirements by urban mobile society to use laptops and portable electronic devices for work and various purposes while travelling. However, crowds and limited urban space posed as constraint, especially when the device needs to be accessed on public transportation such as bus, taxi, and train.

Most traditional laptop cases provide only one a basic function to store the laptops, and the case is placed aside when laptops are in use. On the other hand, most commuters find it troublesome to use laptops on public transportation by placing them on laps while sitting, not to mention that it is harder to hold the device while standing. This could possibly cause injury and loss should the laptops fall due to imbalance and emergency situations.

US 7,778,026 described a laptop computer carrying case which transforms into a desktop for use of laptop or similar electronic device having keyboard and hingeable openable display. The laptop key board is held by bands in the lower portion of the case and the display is held in the top section of the case. Hinge structures are provided on the left and right sidewalls of the bottom section of the case. When the hinge structures are pivotally angularly separated, the bottom section containing the keyboard will be substantially horizontal enabling the use of the laptop in a standing or mobile position. The band is worn over the neck of a person.

When the laptop is not being used, the case may be closed and the hinge structures closed with the laptop being carried by the strap over the shoulder. The hinge structure is provided with structure for limiting the amount by which the arms of the hinge may be pivotally angularly separated thereby providing stability to the laptop case in the desk top

position. Detent means is provided to hold the arms of the hinge structure in aligned position when the case is being used to carry the laptop.

Another prior art, CN 201332784 relates to laptop bag where in particular the laptop bag can be transformed into a computer desk. The laptop bag can be used when the user is sitting, standing as well as walking and is also suitable for users to write and draw in standing posture. The laptop bag has the structure of a folded bracket, arranged in a common laptop single shoulder bag, the fixing plate of the bracket is fixed with the laptop bag and the other end bracket desktop can be unfolded and extends outside the laptop bag so that the laptop can be placed on the desktop of the folded bracket for the operation.

To operate the laptop, the bag strap is worn over the neck. Furthermore, the laptop bag is fixed with the body of the user through a belt, which can prevent the laptop bag from swaying randomly. With the help of the folded bracket by adopting human body engineering design, the manoeuvrability and comfort of the user can be ensured. The bracket desktop can be folded inside the bag when not in use.

The above prior arts provide a temporary base for the use for laptop operation under mobility moments. These two inventions use a neck strap to hold the base to ensure that the base is secured. These inventions are mostly suited for standing environment and it requires the user to manually remove the laptop to be placed on the bracket or base for operation.

SUMMARY OF INVENTION

The present invention provides a shoulder strap back frame with an integrated portable computer case workstation whereby a pair of parallel extendible pivoted arms is pivoted to both side of the frame and the portable computer carrier is front swivelling. The arms is provided with extendible forearm, gears and locking mechanism that allow the user to rotate the computer carrier case from storage mode to the front of user when in need. The adjustable arms are then integrated with a bracket holding the base of the computer case so that the bracket can also rotate, slide in and out according to user ergonomic preference. A locking mechanism is provided to latch the forearm. Gear and lock

mechanism is used to limit the angle of pivot of arm. With such embodiment, the invention becomes portable, accessible and comfortable for use in standing or sitting situation. A backpack is affixed to back frame.

The invention fulfills mobility criteria while ensuring easy accessibility of device and comfort of use. The present invention replaces neck strap as holding material with back frame and uses extendible arms to hold the base for laptop operation under various conditions. Furthermore, the neck strap can cause neck strain. The invention also takes into consideration being a standalone mechanism which does not require the user to remove the laptop from the backpack and also does not depend on additional external structure to operate the workstation which is required in other prior arts.

BRIEF DESCRIPTION OF DRAWINGS

Fig. 1 is a drawing of the frame for portable computer case in work mode of a user in standing position, according to the invention.
Fig. 2 is a drawing of the computer case workstation components, in work mode.
Fig. 3 is a drawing of the frame in storage mode.
Fig. 4 is a drawing of the frame of Fig. 3, arms extended.
Fig. 5 is an expanded drawing of part of locking mechanism of the frame of Fig. 3.
Fig. 6 is a drawing of frame in storage mode of a user in sitting position.
Fig. 7 is a drawing of frame showing the extension of forearm.
Fig. 8 is a drawing of arm being swivelled to the front of user.
Fig. 9 is a drawing of arm swivelled to the front of user.
Fig. 10 is a drawing of base swivelled to horizontal position.
Fig. 11 is a drawing of frame in work mode of a user in sitting position.
Fig. 12 is a drawing of frame in storage mode in standing position.

DESCRIPTION OF EMBODIMENTS

Hereinafter, the present invention is described in detail.

The invention involves a frame [20] with shoulder strap back frame [21] and integrated computer carrier case [22] affixed to computer base [26], whereby a pair of parallel

extendible arms [24] is pivoted to the side of frame [20]. A forearm [24A] is extended by arm [24]. The arms [24] are pivoted to the back frame [21] on one end and the base [26] on the other end. The base [26] can be swiveled to horizontal position to facilitate the use of portable computer [28] kept in computer case [22]. A backpack [32] is also affixed to frame [21]. The computer case [22] provides cover for portable computer [28]. The drawing of the frame [20] with the integrated computer case [22] in work mode is shown in Fig. 1.

The adjustable arms [24] is provided with extendible forearms [24A], gears and locking mechanism that allow the user to rotate the portable computer [28] and computer carrier case [22] from storage mode to the front of user when in need. The adjustable forearms [24A] are then integrated with a bracket holding the base [26] of the computer case so that the bracket can also rotate, slide in and out along base slider [30] for user viewing preference. The expanded view of computer carrier case [22] is shown in Fig. 2. The case [22] is provided with a holder [31].

An embodiment of frame [20] will be described.

The frame comprises of back frame [21], and a pair of arms [24] pivoted to back frame, as shown in Fig. 3. A simple back frame [21] consist of two elongated tubular frame connected by a single tubular frame. Arms [24] are pivoted to back frame [21] with gear and lock mechanism [34]. The gear and lock mechanism control and limit the angle of pivot. Another locking mechanism [36] is provided to latch the movement of forearm [24A]. The forearm [24A] can be released and extended from latch, as shown in Fig. 4. A person having ordinary skilled in the art can use the same principle to build various embodiment of locking and forearm release mechanism.

An embodiment of the locking mechanism between arm [24] and forearm [24A] will be described by referring Fig. 5. A lock release [40] is connected to locking mechanism [36]. A cam [42] is located above the locking release [40]. The cam [42] is connected to a string [44]. A pulley [46] holds the string at the corner. The end of the string is connected to lock [48]. The lock [48] fills the gap of lock cutout [50] between arm [24] and forearm [24A] to secure thern together. When the lock release [40] is operated it pushes the cam

[42] up. The cam [42] will pull the string [44] through pulley [46]. The string [44] will pull the lock [48] out of lock cutout [50]. Hence, forearm [24A] can be released.

In sitting or standing position, the external frame [20] can be used by first releasing the arms [24] from locking position, in storage mode, as shown in Fig. 3 and Fig. 6. The forearms [24A] are then slide upwards, as shown in Fig. 7. Then, the arms [24] and computer base [26] is swiveled to the front, as shown in Fig. 8 and Fig. 9. The computer base is next swiveled to a horizontal position, as shown in Fig. 10. The portable computer clipped to the base [26] can then be released and be used comfortably, as shown in Fig. 11. The base slider [30] can also be used to adjust viewing position in work mode.

By using the frame [20], user has the freedom to carry different types of bags according to required storage. The computer case [22] is the carrier on the top part of the adjustable, front swiveling arms [24]. A backpack carrier [32] can be affixed for extra storage at the bottom of frame [20], as shown in Fig. 12.

As such, with this invention, computer case becomes portable, accessible and comfortable for storage or work mode. Person having ordinary skilled in the art can adapt the frame to be used with a tablet. The user does not need to remove portable computer from the case as it has an easy access mechanism that brings portable computer from the back of the user to the front via adjustable, front swiveling arms [24]. It also does not require external support as the frame [20] structure provides support itself. Most importantly this portable computer carrier is available for use under sitting or standing position and can be adjusted according to users comfort.

Accordingly, the invention disclosed a frame [20] with an integrated portable computer case [22] whereby a pair of parallel adjustable arms [24] is integrated to the frame [20] provided with gears and locking mechanism. When in need, the base holder [28] can be extended and rotated so that the portable computer carrier case is swiveled from storage mode to the front of user. The base holder [28] and base slider [30] can be adjusted accordingly for the user viewing preference. As such, the invention becomes portable, accessible and comfortable for any kind of user situation. The user does not need to remove portable computer manually due to easy access mechanism that brings portable

computer to the front and no external support is required as the external frame [22] structure provides support itself.

CLAIMS

1. A frame [20] for portable computer carrier, comprising:
   a computer base [26]; and
   a pair of arms [24], pivoted to two opposite side of computer base [26];
   characterised in that,
   a shoulder strap back frame [21] pivots the other end of arms [24], said arms are provided with extendible forearms [24A].

2. A frame [20] according to claim 1, further comprising a computer case [22] affixed to computer base [26].

3. A frame [20] according to claim 1, further comprising a backpack [32] affixed to back frame [21].

4. A frame [20] according to claim 1, further comprising a base slider [30] for sliding base [26].

5. A frame [20] according to claim 1, wherein arms [24] are provided with locking mechanism [36] to latch the movement of forearm [24A].

6. A frame [20] according to claim 1, wherein arms [24] are provided with gear and lock mechanism [34] that control and limit the angle of pivot.

Fig. 1

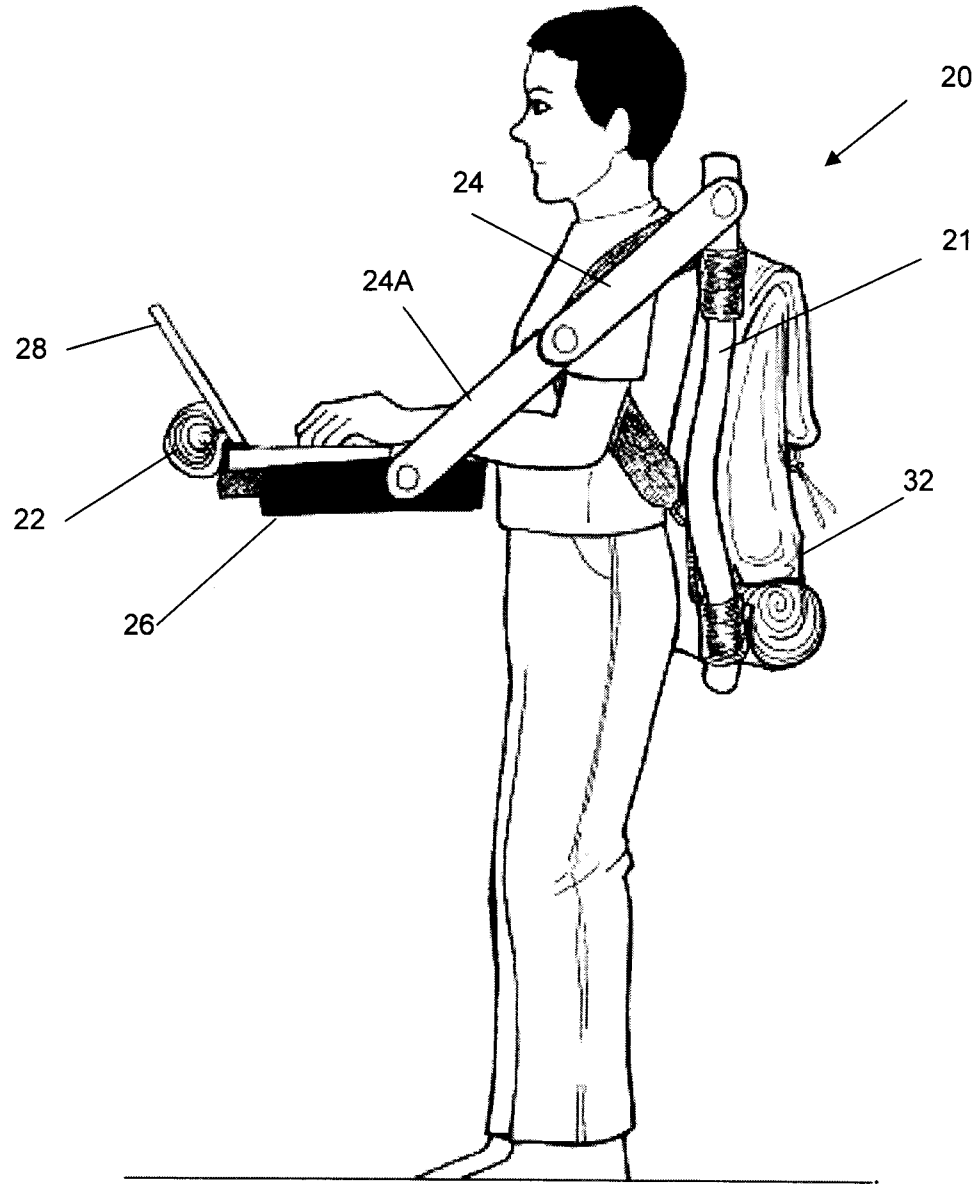


Fig. 2

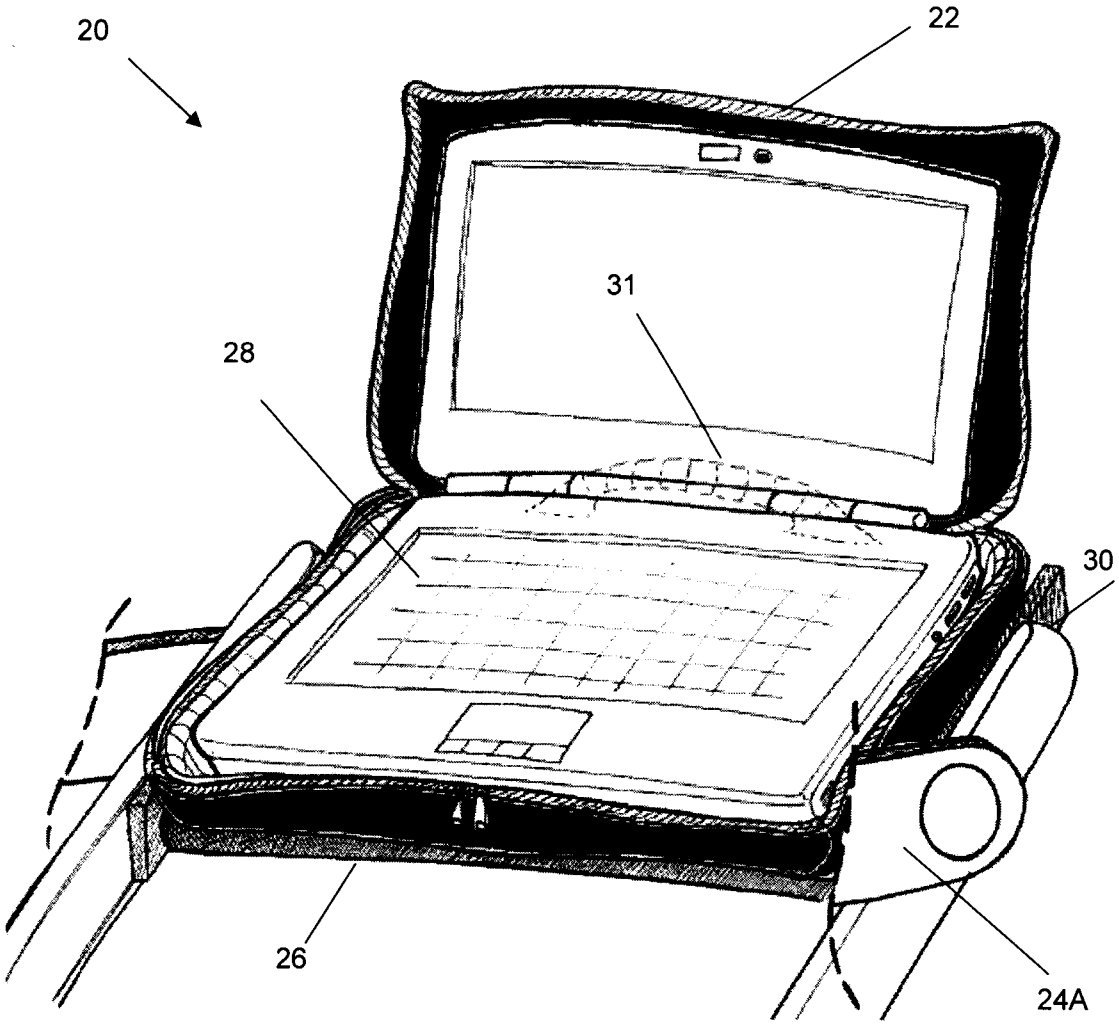


Fig. 3

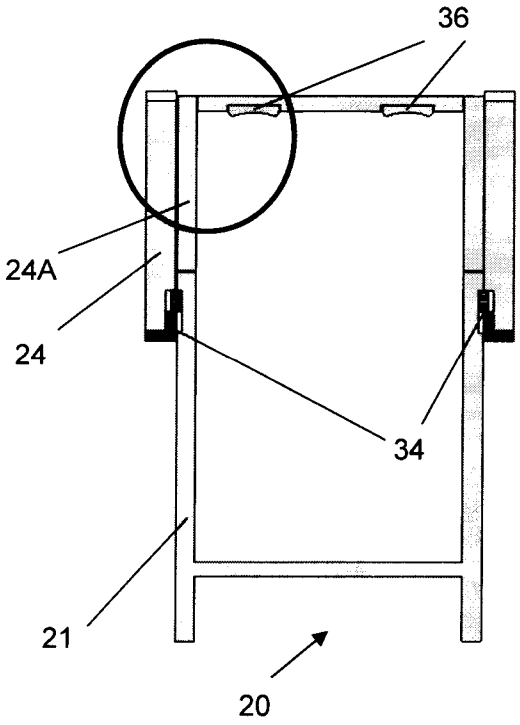


Fig. 4

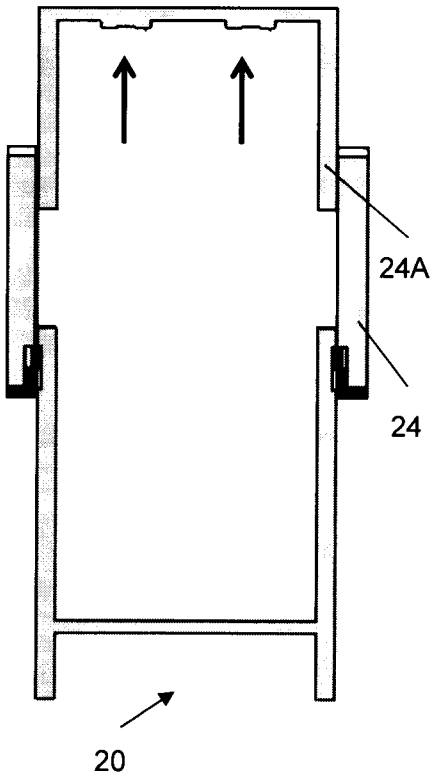


Fig. 5

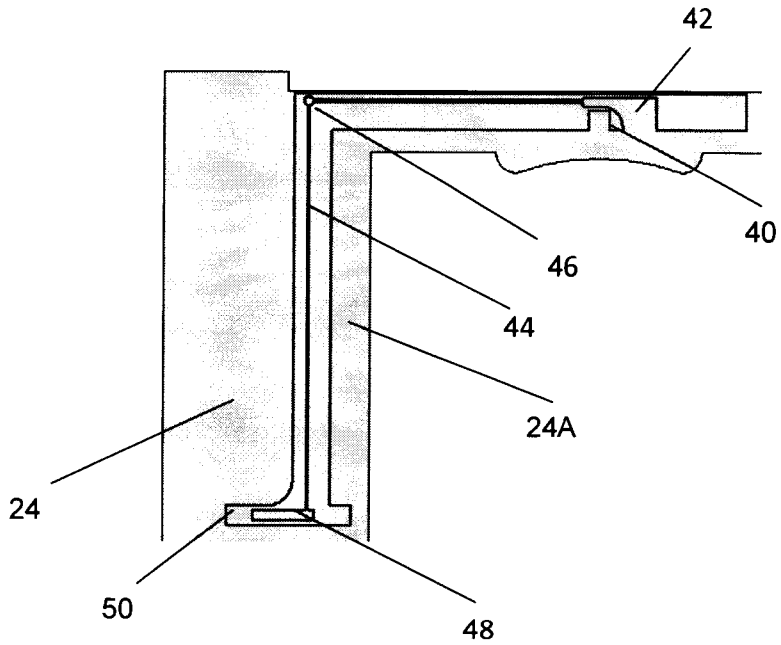


Fig. 6

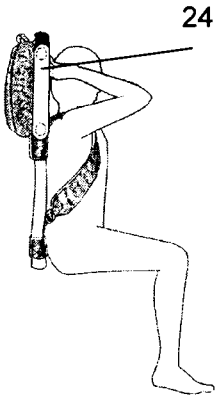


Fig. 7

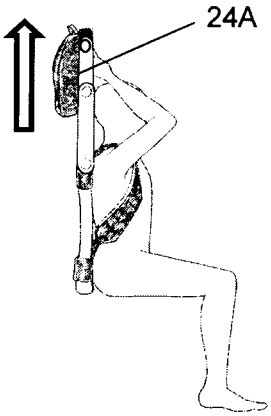


Fig. 8

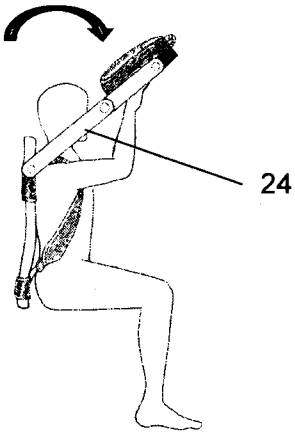


Fig. 9

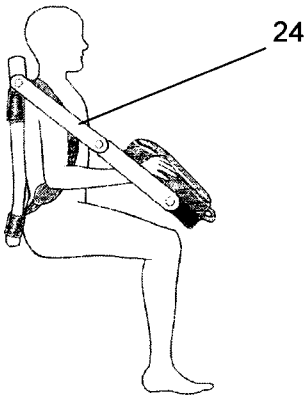


Fig. 10

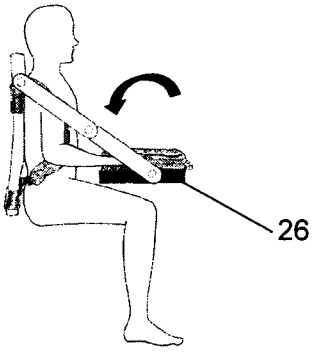


Fig. 11

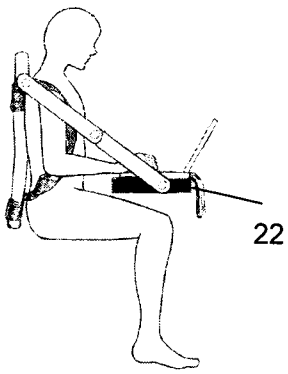
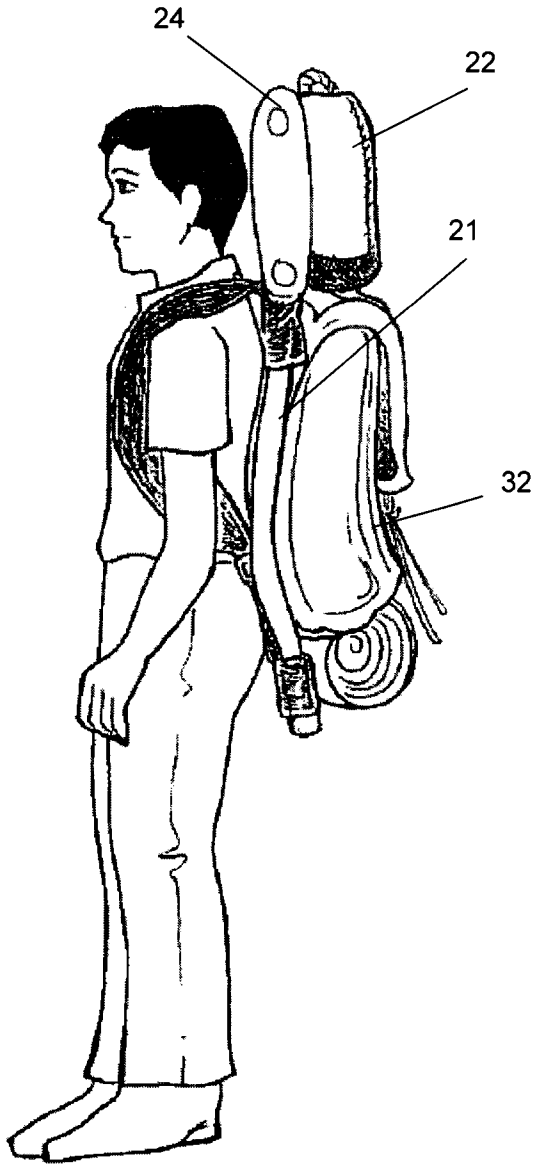


Fig. 12



INTERNATIONAL SEARCH REPORT

International application No.
PCT/MY2015/000014

A. CLASSIFICATION OF SUBJECT MATTER

A45F 3/08 (2006.01) F16M 13/04 (2006.01) A45F 4/02 (2006.01)

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)

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)

WPIAP & EPODOC: IPC & CPC A45F 3/08, A45F 3/10, A45F 3/04, A45F 4/02, F16M13/10, F16M 13/04 and KEYWORDS computer, pivot, backpack, chest, and similar terms.

EPODOC: CPC A45F2200/0525, G10G5/005, A45C2011/003, A45F2004/006, and KEYWORDS pivot, computer, backpack, and similar terms.

EPODOC: applicant name search

Google Patents and Google: computer, packpack, pivot, chest, and similar terms.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	Documents are listed in the continuation of Box C	

[X] Further documents are listed in the continuation of Box C [X] See patent family annex

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Date of the actual completion of the international search	Date of mailing of the international search report
2 July 2015	02 July 2015

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Telephone No. 0262256116

INTERNATIONAL SEARCH REPORT C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		International application No. **PCT/MY2015/000014**
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2012/020406 A1 (YEFET et al.) 16 February 2012 Whole document, in particular page 5 lines 28 – page 8 line 9, and figures 1, 2	1, 2, 3, 5, 6
X	US 2013/0094847 A1 (THE ALBA GROUP, LTD) 18 April 2013 Whole document, in particular paragraphs 36, 37, 45, and figures 1 and 5	1, 2, 3, 5
X	CN 202580539 U (HAN XINYU) 05 December 2012 & English language machine translation retrieved from Google Patents Whole document, in particular paragraph 113 – 115, and figure 7	1, 2, 3, 4, 5
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X	US 2014/0001222 A1 (VIERTHALER et al.) 02 January 2014 Whole document, in particular paragraph 33 – 36, Figure 7A – 7C	1, 2, 3, 5
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INTERNATIONAL SEARCH REPORT Information on patent family members	International application No. **PCT/MY2015/000014**

This Annex lists known patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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CN 202733379 U	13 February 2013		

End of Annex

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.