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(54) Title: PULLEY CAMERA STRAP AND CAMERA MOUNTING SYSTEM USING SAME

(57) Abstract: The present invention is directed towards a retractable pulley strap assembly adapted to mount to the bottom of a camera, or other device, and to be used in a variety of configurations. The strap is adapted to allow for extension, and increase of the effective strap length, while the camera is in use. The strap is adapted to retract to a shorter effective length while the camera is not in use, such that the camera is held tightly against the user's body.

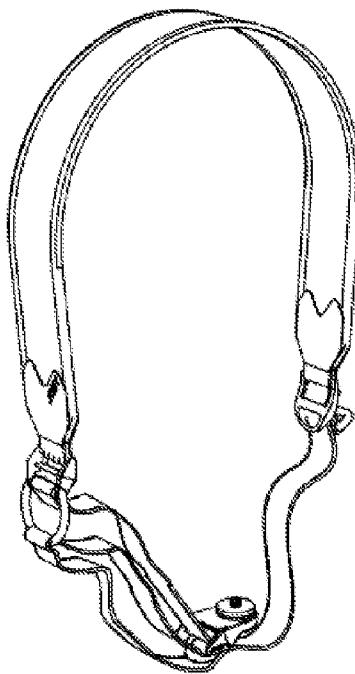


FIG. 12

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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Published:

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- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

PULLEY CAMERA STRAP AND CAMERA MOUNTING SYSTEM USING SAME

[0001] CROSS-REFERENCE TO RELATED APPLICATIONS

[0002] This application claims priority to U.S. Patent Application No. 61/641,631 to Hale, filed May 2, 2012.

[0003] BACKGROUND

[0004] Field of the Invention

[0005] The present invention relates to a camera mounting and handling, and more specifically to a camera mount and adjustable strap.

[0006] Description of Related Art

[0007] Cameras may be handled by a user in a variety of ways, and may have different straps or tripod mounts attached depending upon the situation. In some uses, a short wrist strap may be used which adds security to holding the camera while photographing. In some uses, a longer strap may be used which allows the

camera to be suspended from the neck of the user while not being used. In some uses, a user may want to mount the camera onto a tripod.

[0008] In another aspect, a strap may be used to support a camera wherein the strap is laid over both the neck and a shoulder of the user. A drawback of this aspect is that a strap long enough to allow for use of the camera will be long enough that the camera, when dangling from the strap while not in use, will be able to have too much mobility. The camera may be subject to too much motion, such that it is a distraction to the wearer. This may also present the risk of damage to the camera should it hit an object with this large range of possible motion.

[0009] What is called for is a body strap for a camera which may retract while the camera is not being used for photography such that the camera is held firmly against the body.

[0010] **SUMMARY**

[0011] The present invention is directed towards a retractable pulley strap assembly adapted to mount to the bottom of a camera, or other device, and to be used in a variety of configurations. The strap is adapted to allow for extension, and increase of the effective strap length, while the camera is in use. The strap is adapted to retract to a shorter effective length while the camera is not in use, such that the camera is held tightly against the user's body.

[0012] **BRIEF DESCRIPTION OF THE DRAWINGS**

[0013] Figure 1 illustrates a view of a pulley camera strap in a shortened configuration according to some embodiments of the present invention.

[0014] Figure 2 illustrates a view of a pulley camera strap in a lengthened configuration according to some embodiments of the present invention.

[0015] Figure 3 illustrates a view of a pulley camera strap according to some embodiments of the present invention.

[0016] Figure 4 illustrates a view of a pulley camera strap and camera in a shortened configuration according to some embodiments of the present invention.

[0017] Figure 5 illustrates a view of a pulley camera strap and camera in a lengthened configuration according to some embodiments of the present invention.

[0018] Figure 6 illustrates a view of a pulley camera strap according to some embodiments of the present invention.

[0019] Figure 7 is a perspective view of a camera strap according to some embodiments of the present invention.

[0020] Figure 8 is a perspective view of a camera strap according to some embodiments of the present invention.

[0021] Figure 9 is a side view of a camera strap according to some embodiments of the present invention.

[0022] Figure 10 is a top view of a camera strap according to some embodiments of the present invention.

[0023] Figure 11 is a bottom view of a camera strap according to some embodiments of the present invention.

[0024] Figure 12 is a perspective view of a camera strap according to some embodiments of the present invention.

[0025] Figure 13 is a perspective view of a camera strap according to some embodiments of the present invention.

[0026] Figure 14 is an end view of a camera strap according to some embodiments of the present invention.

[0027] **DETAILED DESCRIPTION**

[0028] In some embodiments of the present invention, as seen in Figure 1, a pulley camera strap 100 is adapted to support a device, such as a camera. The pulley camera strap 100 may include a main strap portion 103 and a shoulder cushion 102. The pulley camera strap is adapted for use with a camera 101. As seen in Figure 1, in a retracted configuration the pulley camera strap is adapted to go over one shoulder of the user while holding the camera 101 snugly against the body of the user.

[0029] As seen in Figure 2, the pulley camera strap allows for use of the camera 101. A camera 101 may be used by a user 110 with the strap around the user's neck and shoulder while being held in the hand 111 of the user 110. The strap is in an extended configuration such that the loop formed by the strap is longer and adapted to be pulled from the body of the user, providing use of the camera while still around the body. The main strap configuration 103 has been altered by the user to have extended the effective length of the strap.

[0030] As seen in Figure 3, the pulley camera strap allows for the alteration of the loop length of the main strap portion 103. The retracted configuration is adapted to hold the camera snugly around the body of the user, such that the camera does not swing. The extended configuration is adapted to allow for the use of the

camera by the user without having to have removed the strap from around the shoulder and neck of the user.

[0031] As seen in Figure 4, the retracted configuration of the pulley camera strap has a shorter effective strap length. The shoulder strap 102 is adapted to be worn over the shoulder of the user, and may be wider or padded to increase comfort for the user. A first pulley set 120 adjacent to the shoulder strap 102 and a second pulley set 121 adjacent to the camera mount 122 allow for the effective loop length of the pulley camera strap to be adjusted by the user. The pulley system may be able to be extended with a single hand of the user, allowing for the user to use the camera 101. The pulley system may exhibit enough friction that after extension or retraction the strap length stays at the desired effective length under the expected loads seen by the system.

[0032] Figures 5 illustrates the system in an extended configuration, wherein the effective loop length of the strap is at its largest length. Figure 6 illustrates aspects of a pulley strap system according to some embodiments of the present invention.

[0033] In some embodiments of the present invention, as seen in Figures 7-11, a camera strap 200 is adapted to be worn around the neck and/or shoulder of a user. The strap pad 201 allows for comfortable placement on the shoulder of the user. The strap 202 creates a loop in conjunction with the strap pad 201. The length of the loop may be lengthened or shortened by the user by pulling on the strap tab 203. The strap tab 203 also includes a mounting attachment for a camera, which may be a threaded post 204.

[0034] The strap 202 is adapted to slide through the strap tab 203 such that the loop length may be altered. The system is adapted to have the loop remain at the selected length when the user is not moving the strap tab 203 along the strap 202. The strap tab 203 will remain in place on the strap 202 under the forces typically seen by the camera strap under normal use conditions. As the strap tab 203 moves along the strap 202, the relationship of the portion of the strap that is a single strand, towards one end of the strap pad, to the portion of the strap that is overlaid with three strands, changes. As this relationship changes, the loop length, or the effective length of the loop, changes, by changing this relationship. Thus, with an unchanging length of strap the loop length may be altered by manipulation of the location of the strap tab along the strap.

[0035] The strap slider 204 and the strap tab 203 provide routing for the strap 202 such that movement of the strap tab 203 along the strap 202 results in a change of length of the loop created by the strap and strap pad. Changes in the length of the loop allow for different uses, such as snug stowage of the camera strap and camera along the body of the user, or a looser strap allowing for use of the camera by the user with the strap still on the body of the user. Figure 12 illustrates the camera strap 200 in a configuration that it may take when on a user.

[0036] In some embodiments of the present invention, as seen in Figures 13 and 14, the strap pad may be formed with a bend to allow for a different resting configuration on the body of a user.

[0037] As evident from the above description, a wide variety of embodiments may be configured from the description given herein and additional advantages

and modifications will readily occur to those skilled in the art. The invention in its broader aspects is, therefore, not limited to the specific details and illustrative examples shown and described. Accordingly, departures from such details may be made without departing from the spirit or scope of the applicant's general invention.

What is claimed is:

1. A camera strap and mounting system comprising:

A strap pad, said strap pad coupled to a main strap on a first end;
a main strap, said main strap coupled to said strap pad on a first end, said main strap coupled to a strap slider on a second end,
a strap slider, said strap slider coupled to a second end of said strap pad;
a strap tab; and
a camera mount coupled to said strap tab;
wherein said strap tab is adapted move along a portion of said strap.

2. The camera strap and mounting system of claim 1 wherein the loop length of the camera strap system increases when said strap tab is moved along said portion of said strap in a first direction.

3. The camera strap and mounting system of claim 2 wherein the loop length of the camera strap system decreases when said strap tab is moved along said portion of said strap in a second direction.

4. The camera strap and mounting system of claim 3 wherein said main strap is overlaid in a plurality of layers between said strap tab and said strap slider.

5. The camera strap and mounting system of claim 4 wherein said main strap is not overlaid in a plurality of layers between said strap tab and said first end of said main strap.

6. The camera strap and mounting system of claim 5 further comprising:

a first pulley set coupled to said strap tab; and

a second pulley set coupled to said strap slider,

wherein said main strap is threaded through said first pulley set and said second pulley set.

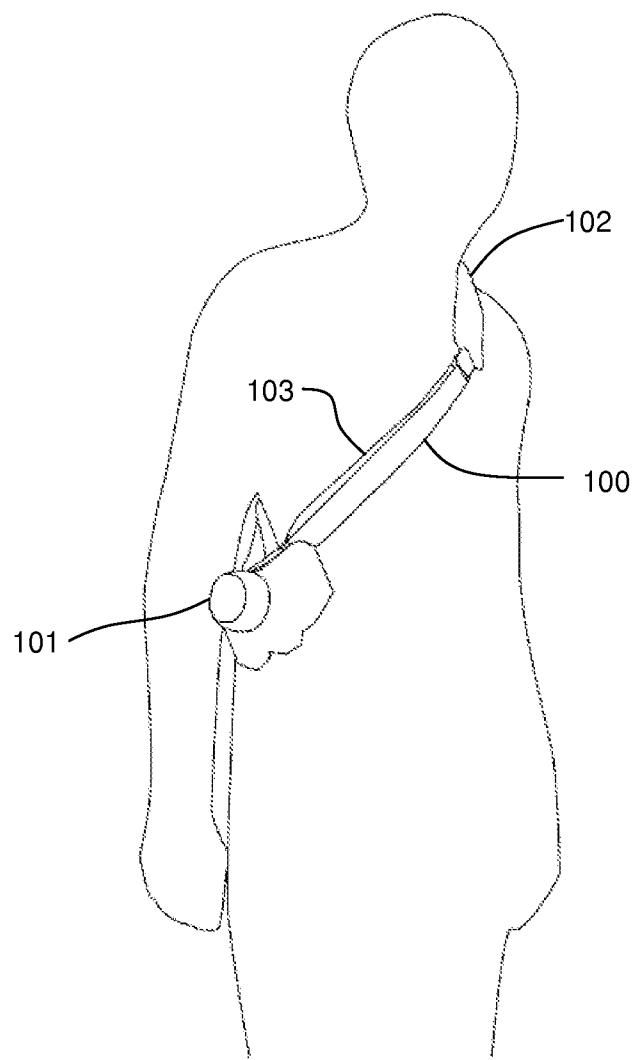
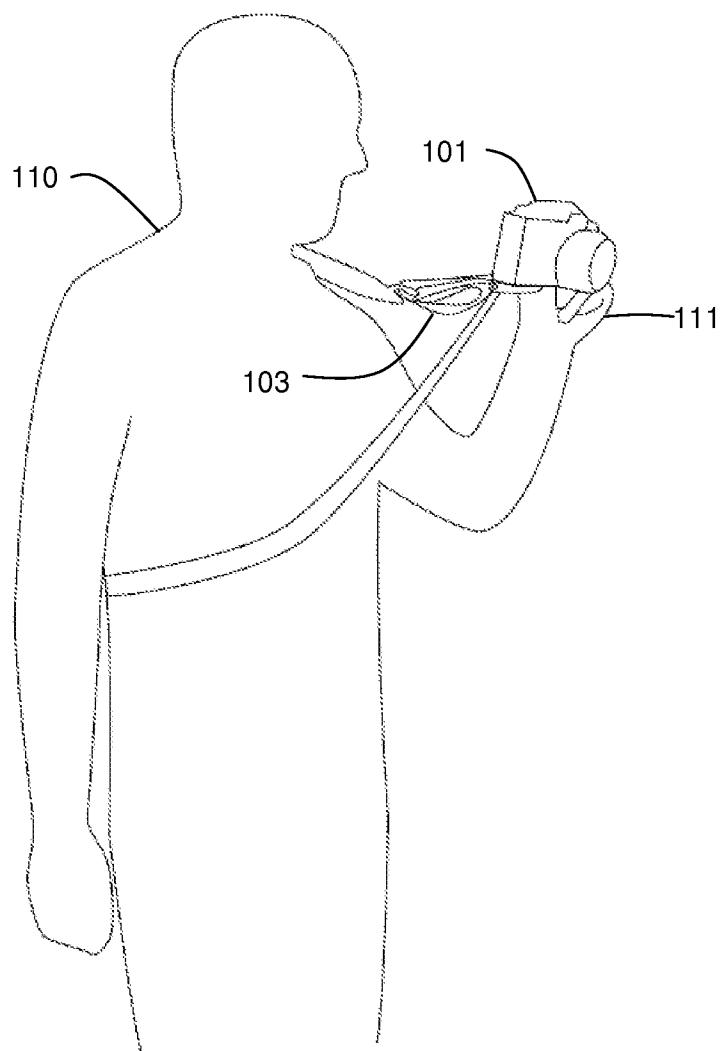
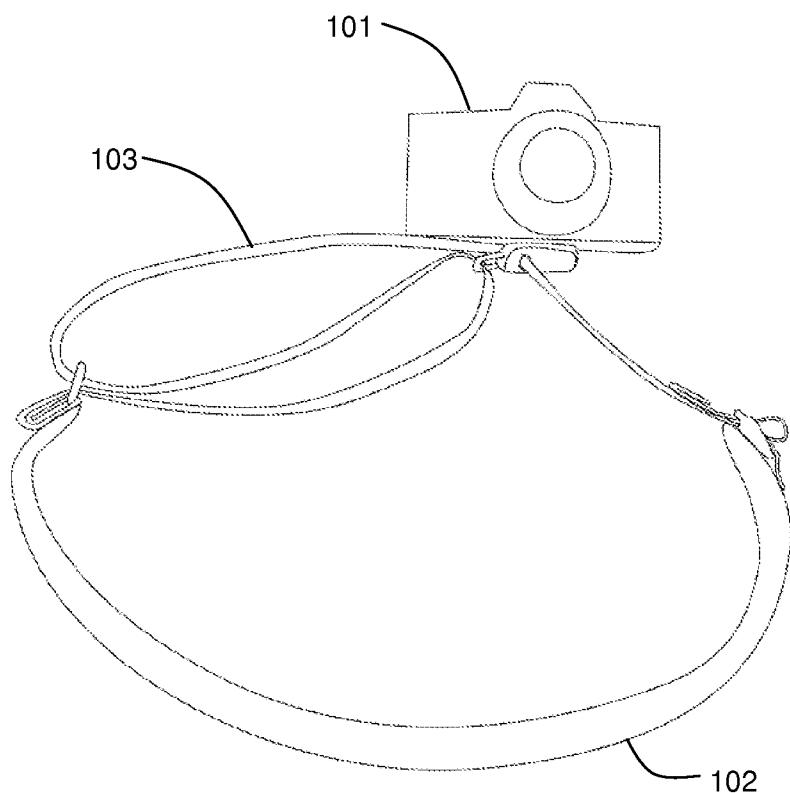


FIG. 1

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**FIG. 2****SHEET 2 / 10**

**FIG. 3**

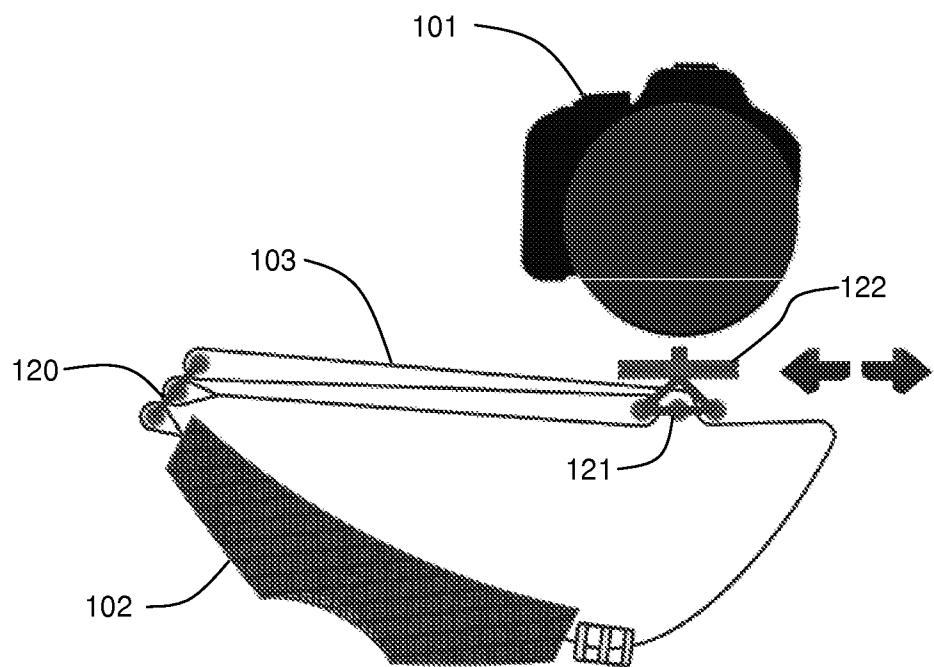


FIG. 4

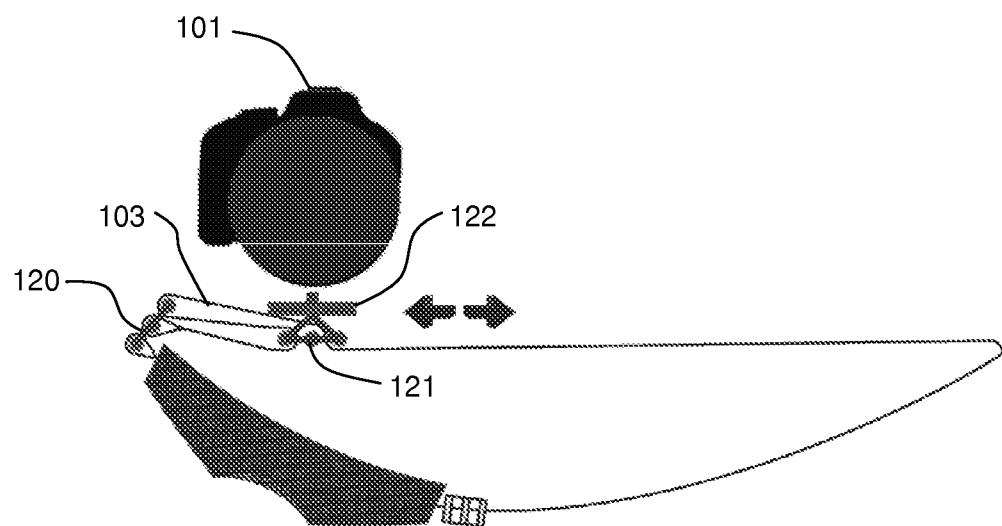


FIG. 5

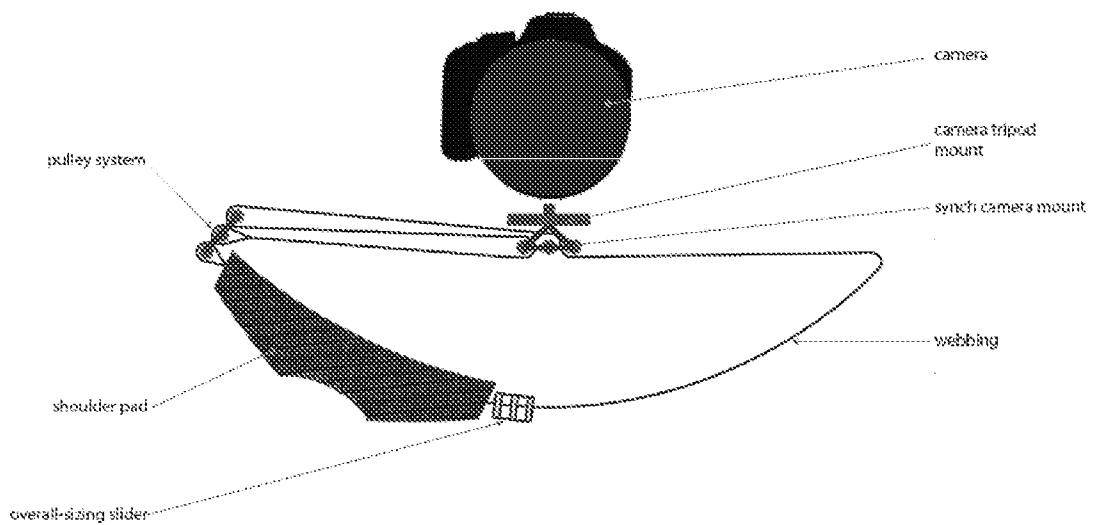
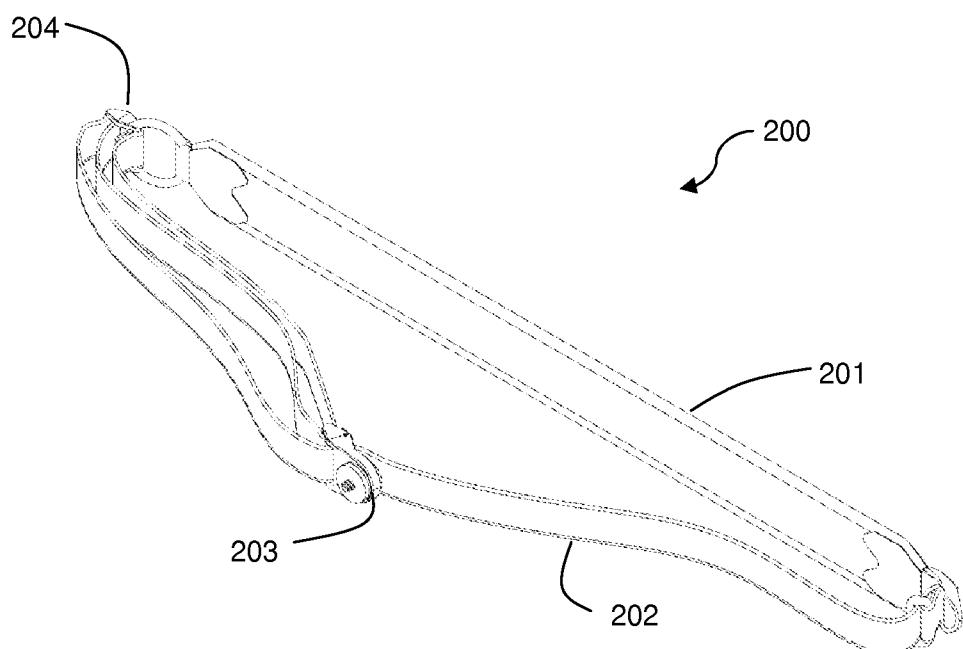
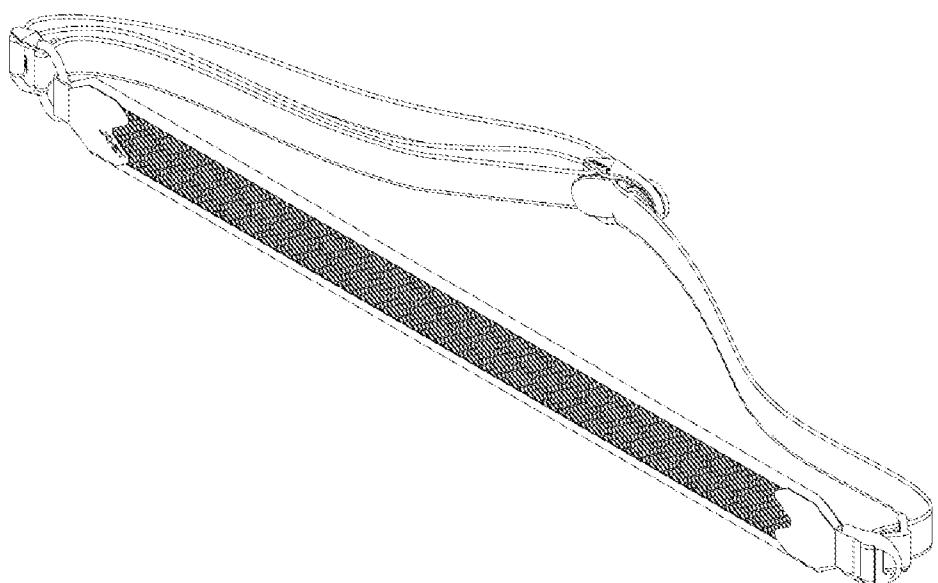
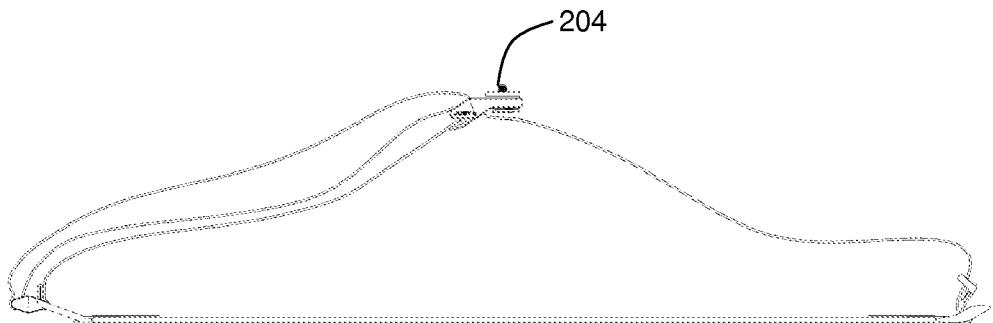
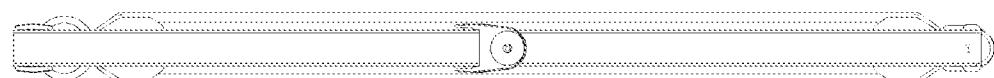
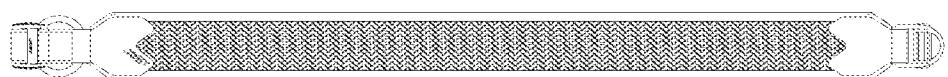


FIG. 6

**FIG. 7****FIG. 8**

**FIG. 9****FIG. 10****FIG. 11**

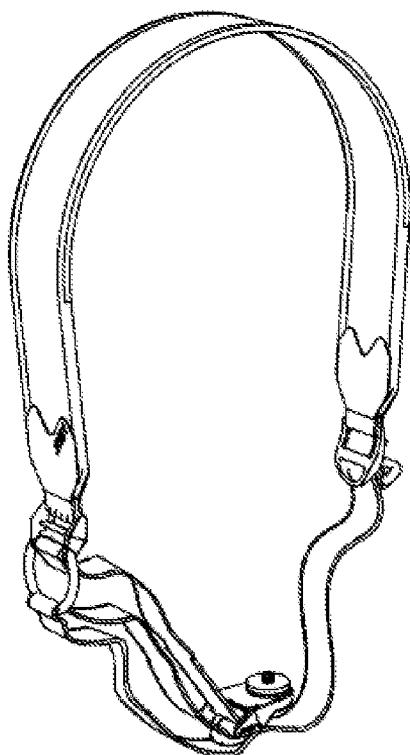


FIG. 12

SHEET 9 / 10

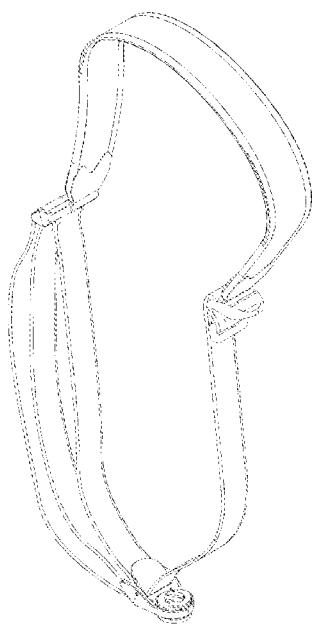


FIG. 13

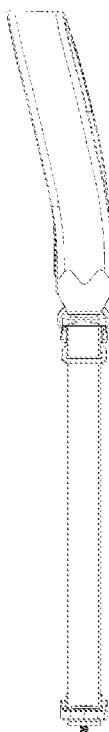


FIG. 14

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2013/039352

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G03B 17/00 (2013.01)

USPC - 224/258

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)

IPC(8) - A45C 13/30; G03B 17/00 (2013.01)

USPC - 224/150, 255, 257, 258, 264, 268, 545, 600, 604, 623, 908; 294/139; 396/423, 428

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

CPC - A45F 2200/0533; G03B 17/00; G10G 5/005; Y10S 224/908 (2013.01)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PatBase, Google Patents, Google

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2,100,088 A (ROBERTSON) 23 November 1937 (23.11.1937) entire document	1-3, 5
A	US 2008/0292303 A1 (KOPE et al) 27 November 2008 (27.11.2008) entire document	1-6
A	US 2012/0061439 A1 (WALLIS) 15 March 2012 (15.03.2012) entire document	1-6
A	US 4,249,686 A (MORWOOD) 10 February 1981 (10.02.1981) entire document	1-6

Further documents are listed in the continuation of Box C.

* Special categories of cited documents:	
“A” document defining the general state of the art which is not considered to be of particular relevance	“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
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Date of the actual completion of the international search

06 September 2013

Date of mailing of the international search report

17 SEP 2013

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