US012389988B2

(12) **United States Patent**
Paik et al.

(10) **Patent No.: US 12,389,988 B2**
(45) **Date of Patent: Aug. 19, 2025**

(54) **STRAP BAR DEVICE OF STRAP ACCESSORY**

(71) Applicant: **WOOJIN PLASTIC Co., Ltd.**, Namyangju-si (KR)

(72) Inventors: **Ji Sook Paik**, Seoul (KR); **Nan Hee Paik**, Seoul (KR); **Ji Hye Paik**, Seoul (KR); **Ji Won Son**, Seoul (KR)

(73) Assignee: **WOOJIN PLASTIC CO., LTD.**, Namyangju-si (KR)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **18/386,883**

(22) Filed: **Nov. 3, 2023**

(65) **Prior Publication Data**

US 2025/0082070 A1 Mar. 13, 2025

(30) **Foreign Application Priority Data**

Sep. 7, 2023 (KR) 10-2023-0118734

(51) **Int. Cl.**
A44B 11/00 (2006.01)

(52) **U.S. Cl.**
CPC ***A44B 11/006*** (2013.01)

(58) **Field of Classification Search**
CPC . A44B 11/006; A44B 11/2553; A44B 11/065; A44B 11/2523; A44B 11/04; A44B 11/2592; A45F 3/047; A45F 2003/001; A45F 3/00
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

125,744 A 4/1872 Low
9,474,333 B2 * 10/2016 Iannello A44B 11/266
9,986,789 B2 * 6/2018 Blackman A44B 11/2592
2003/0145435 A1 * 8/2003 Carver ..... A44B 11/04 24/115 F
2015/0208768 A1 7/2015 Iannello et al.
2023/0119434 A1 * 4/2023 Chan A44B 11/28 24/166

FOREIGN PATENT DOCUMENTS

DE	202010013986	U1	1/2012
JP	H02-125613	U	10/1990
JP	2509010	Y2	8/1996
KR	10-1030366	B1	4/2011
WO	WO 2009/141942	A1	11/2009
WO	WO 2014/019009	A2	2/2014

OTHER PUBLICATIONS

Korean Office Action for related KR Application No. 10-2023-0118734 mailed Nov. 15, 2024 from Korean Intellectual Property Office.
Extended European Search Report for related EP Application No. 23207790.9 mailed Apr. 15, 2024 from European Patent Office.

* cited by examiner

Primary Examiner — Jason W San
Assistant Examiner — Louis A Mercado
(74) *Attorney, Agent, or Firm* — Paratus Law Group, PLLC

(57) **ABSTRACT**

A strap bar device includes: a strap accessory which includes two support parts facing each other to be spaced apart from each other, and a through-hole and a support groove formed in the two support parts to face each other; and a strap bar which is inserted through the through-hole and is supported in the through-hole and the support groove. A strap is connected to the strap bar.

8 Claims, 15 Drawing Sheets

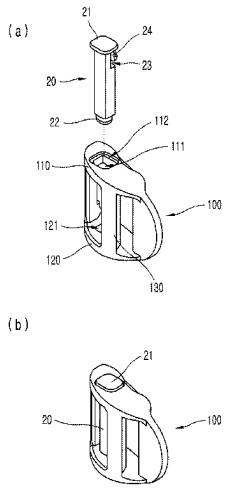


FIG. 1

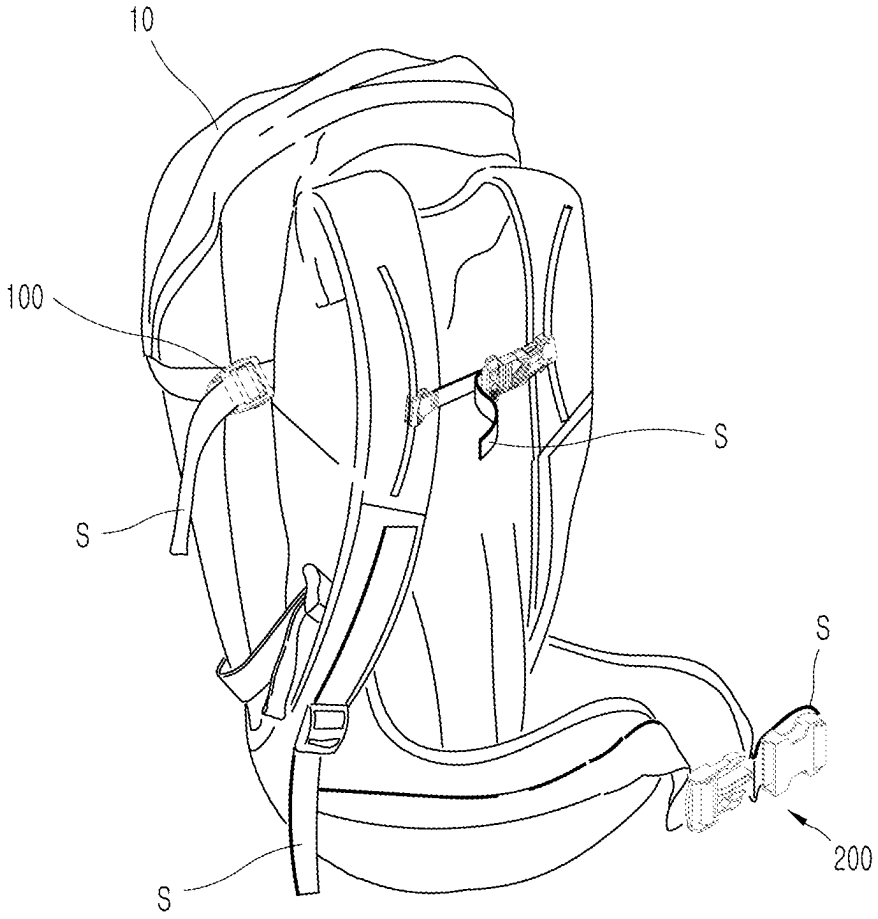


FIG. 2

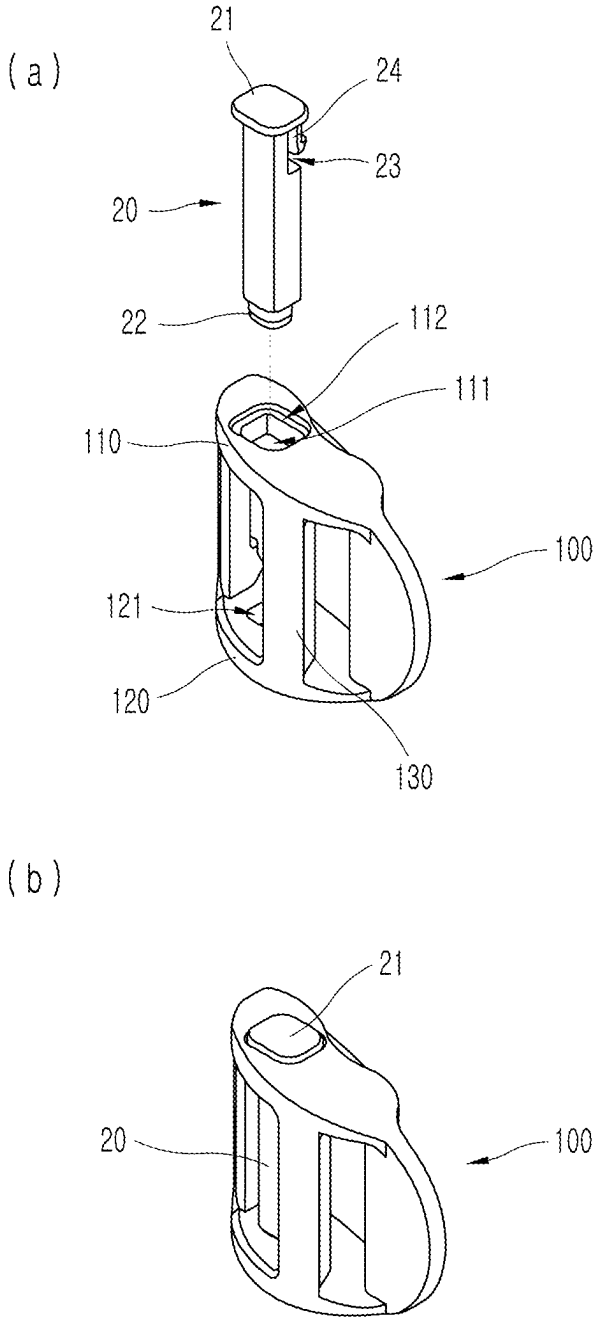


FIG. 3

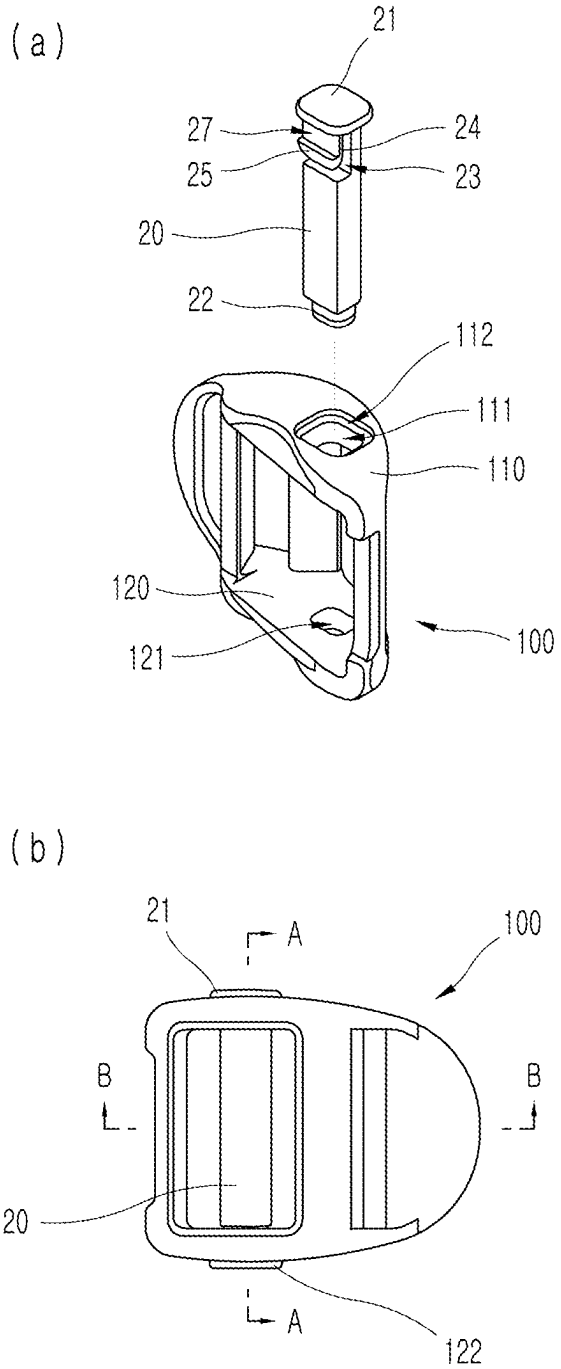
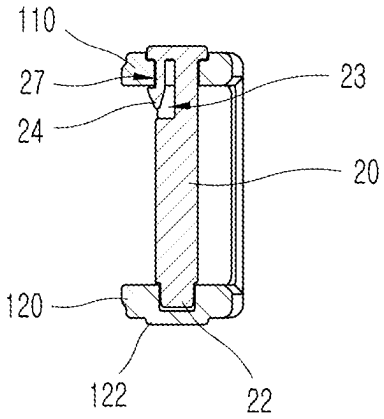


FIG. 4

(a)



(b)

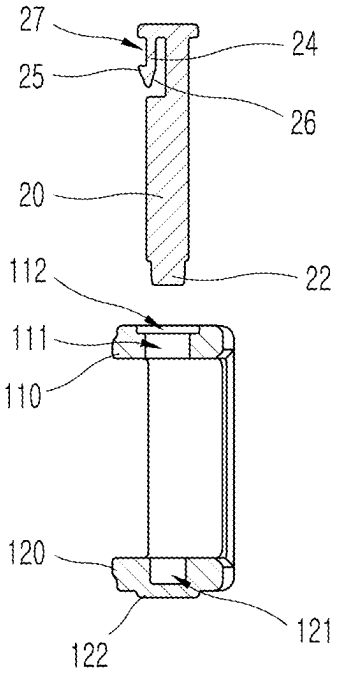


FIG. 5

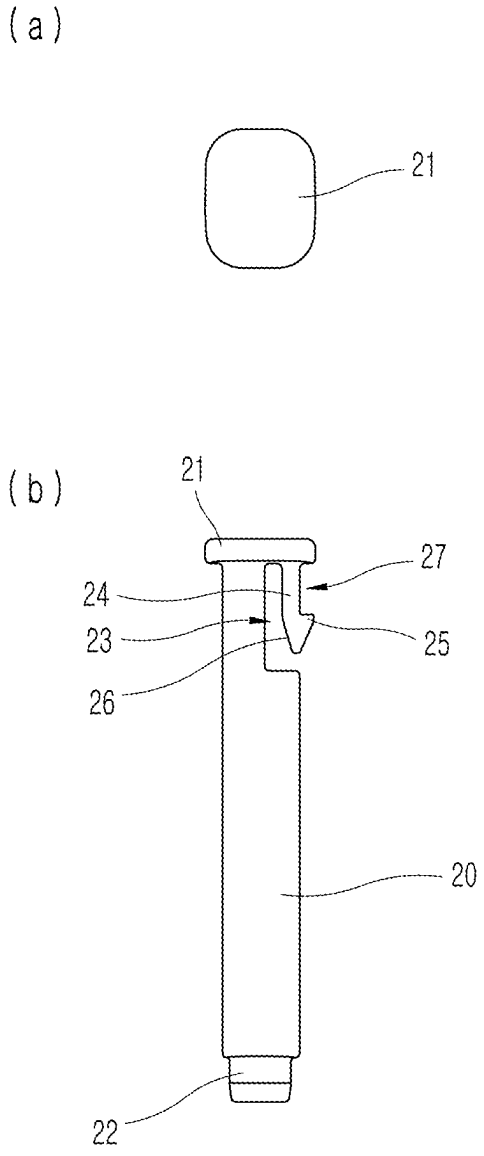


FIG. 6

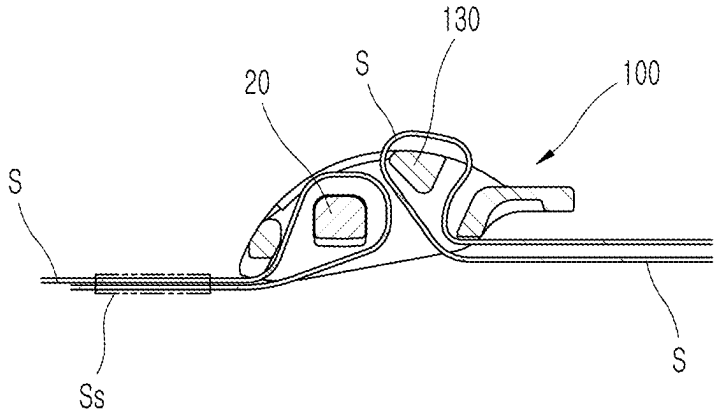


FIG. 7

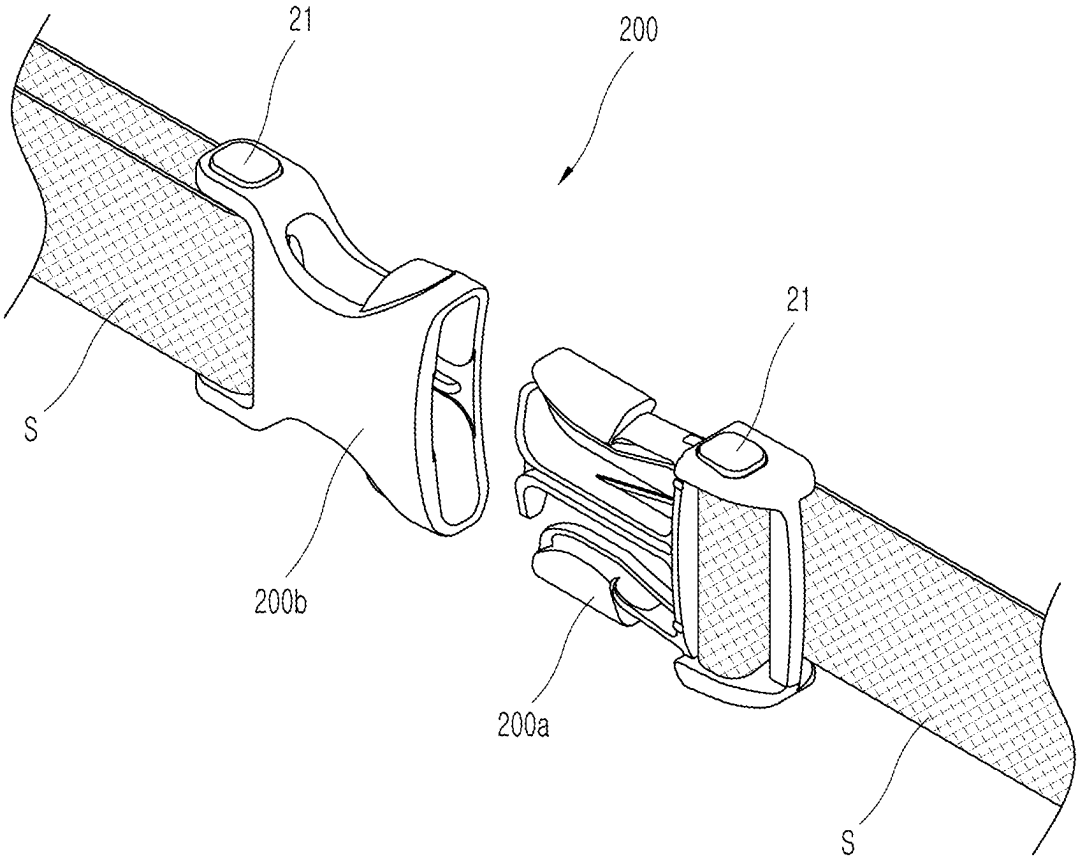


FIG. 8

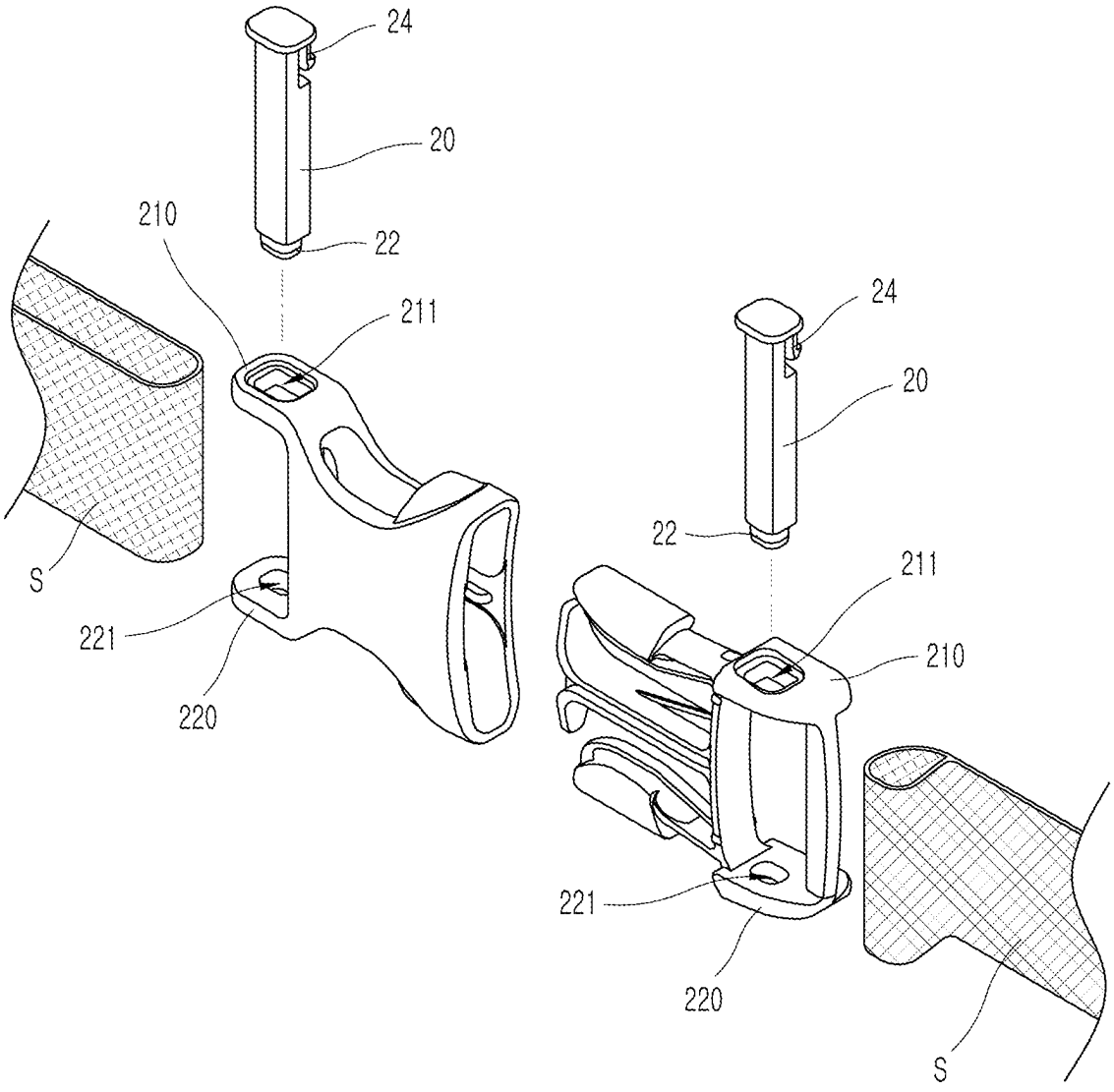


FIG. 9

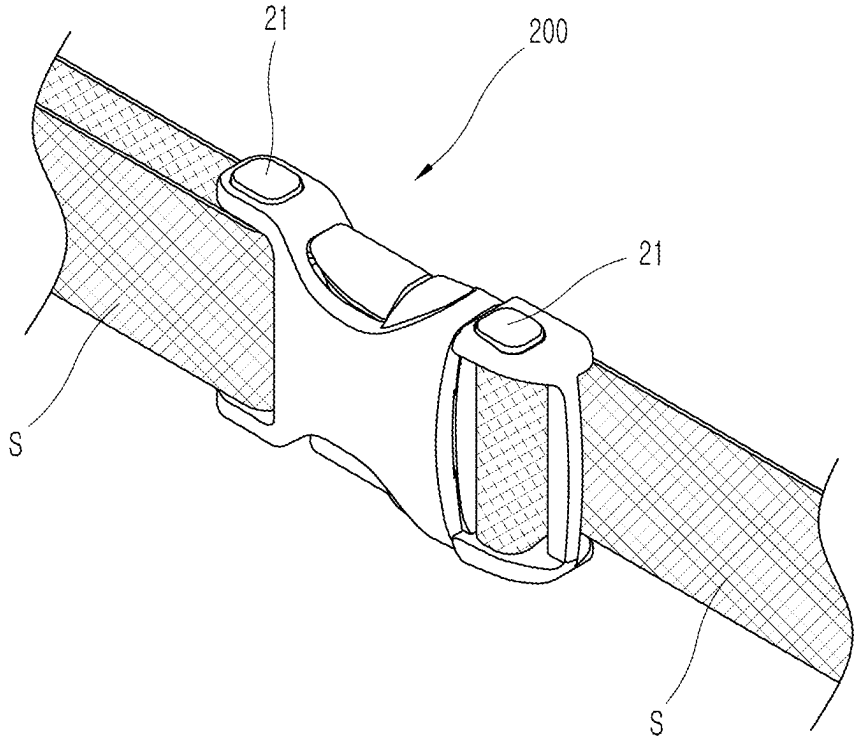


FIG. 10

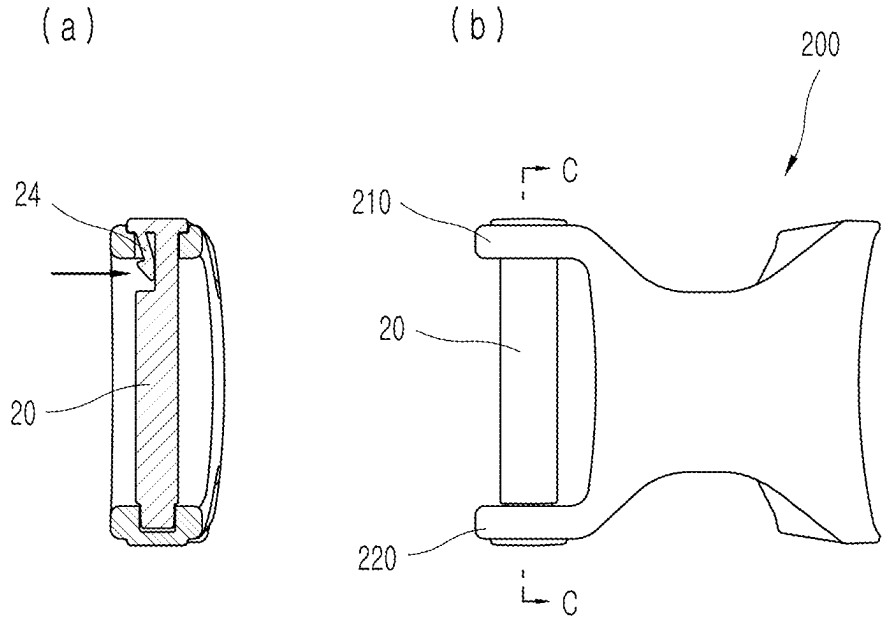


FIG. 11

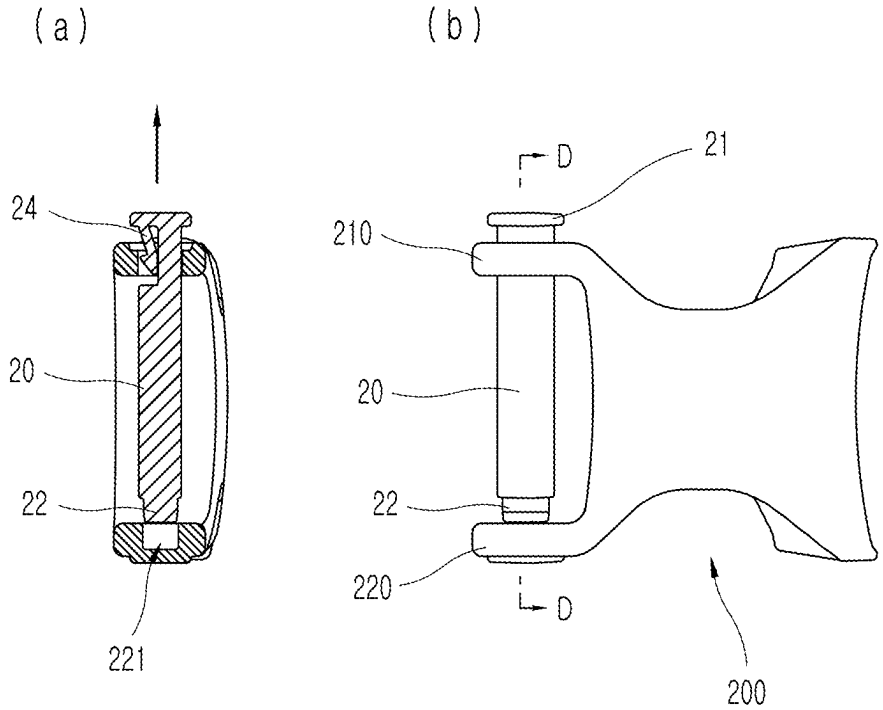


FIG. 12

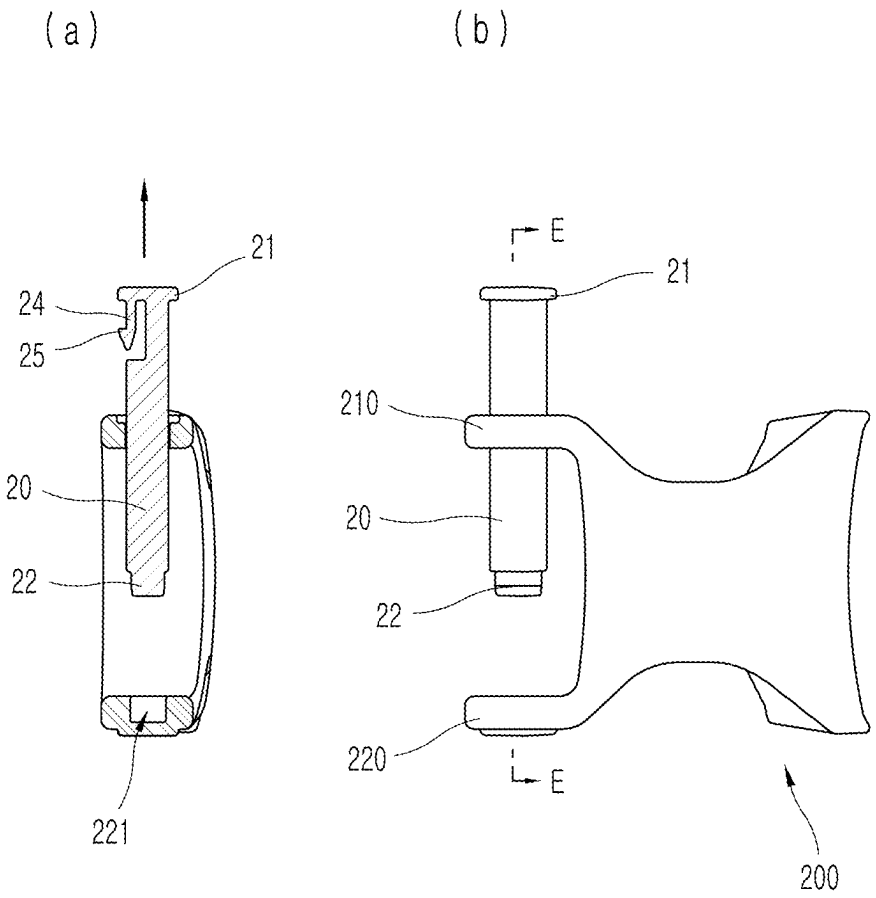


FIG. 13

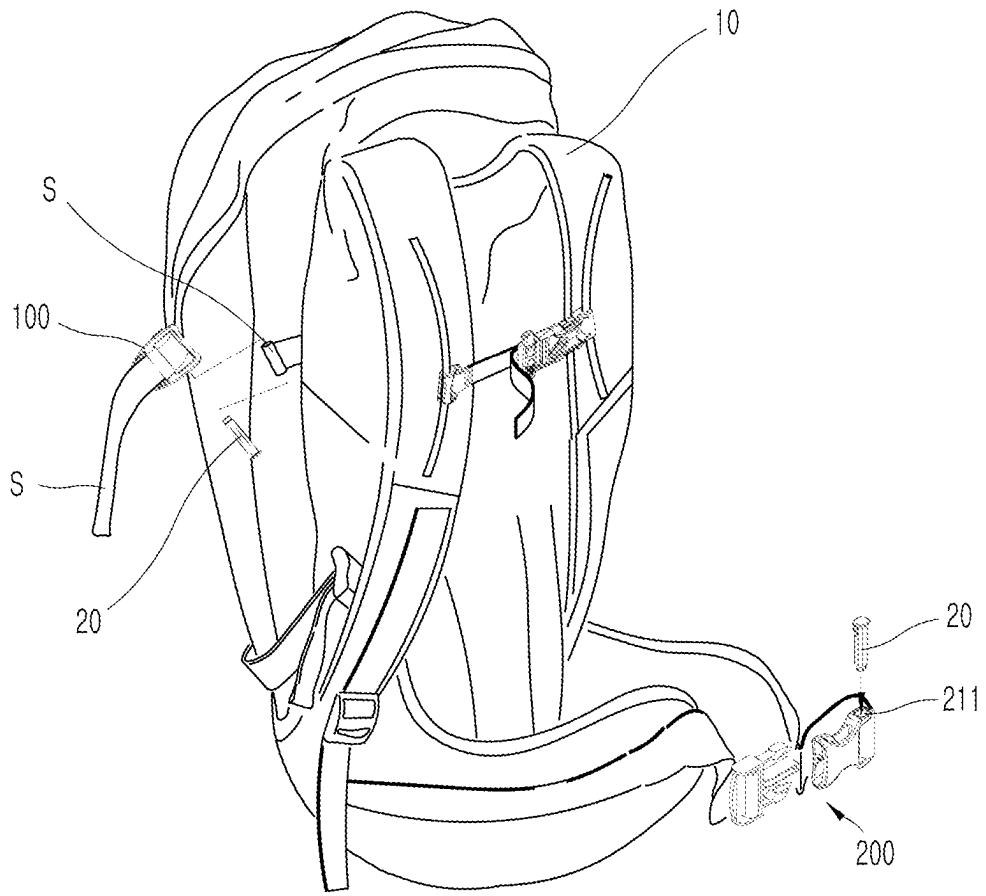


FIG. 14

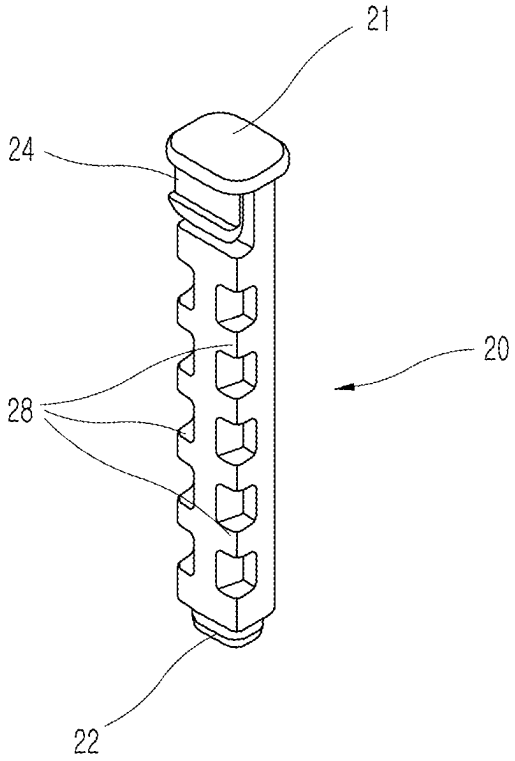


FIG. 15

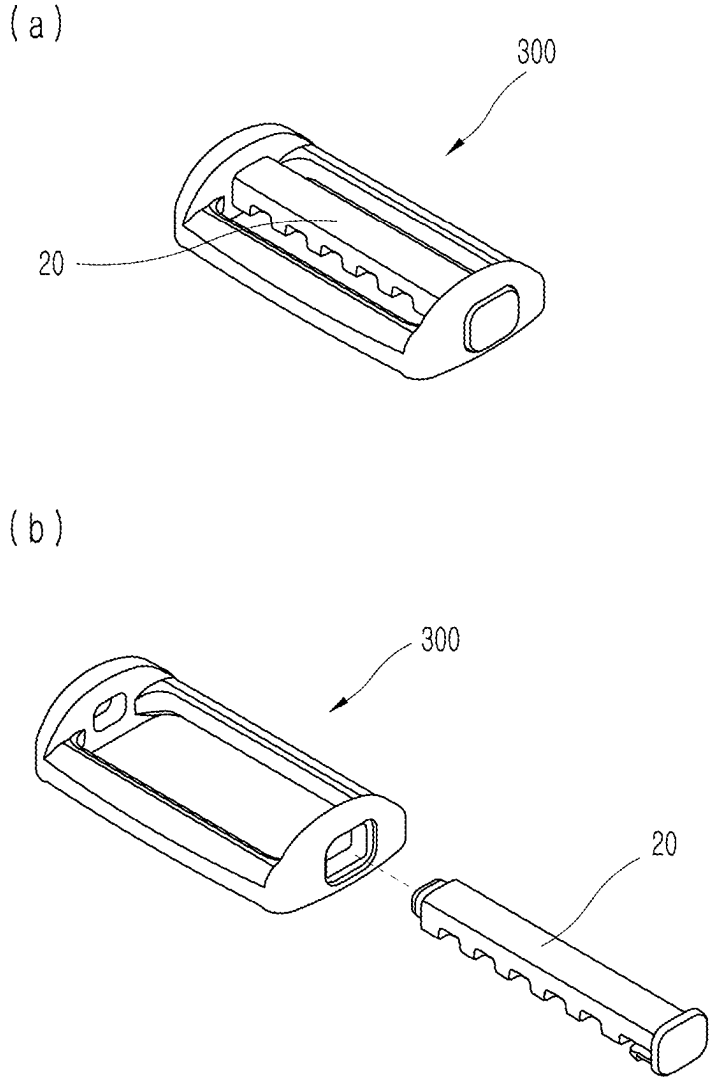


FIG. 16

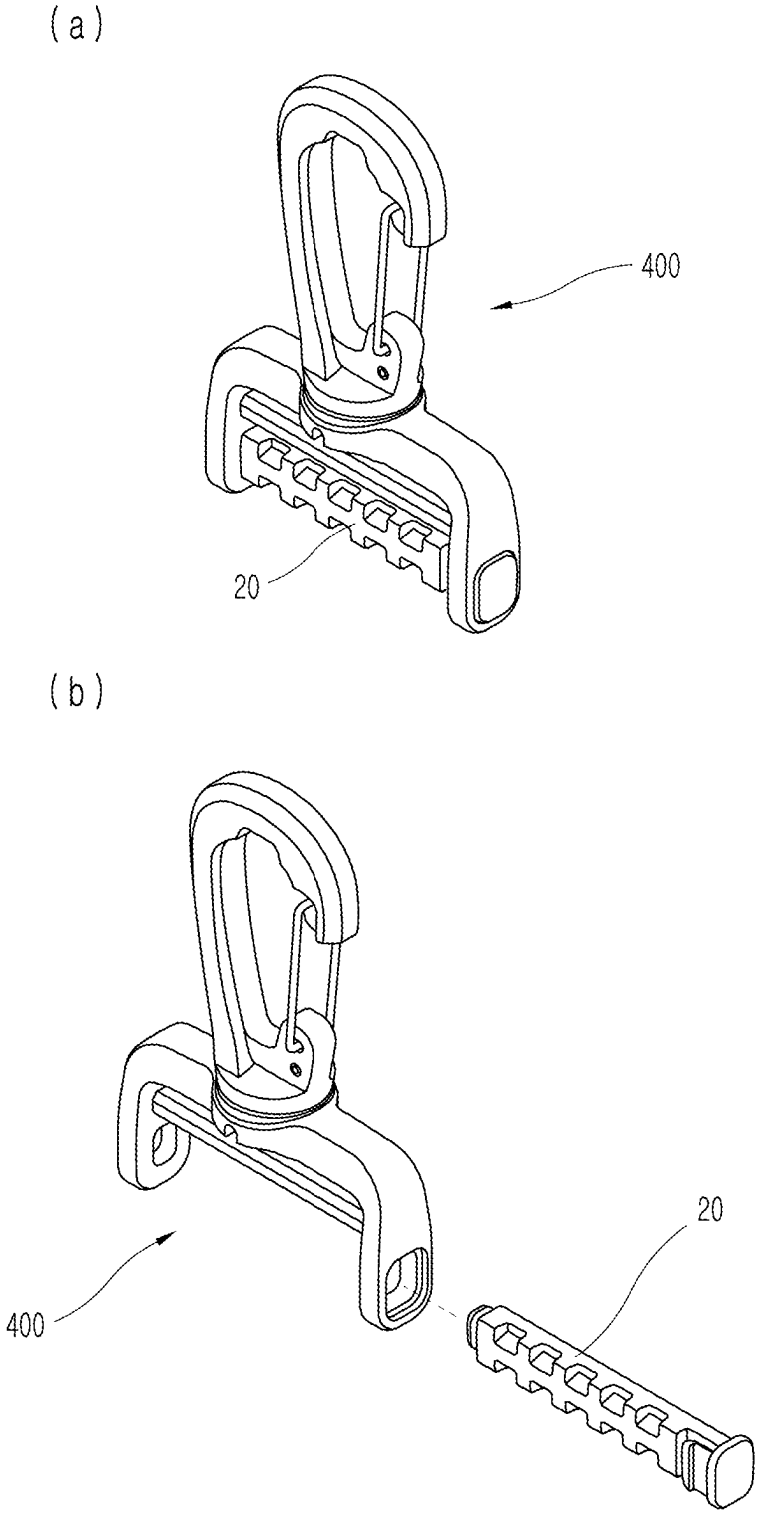
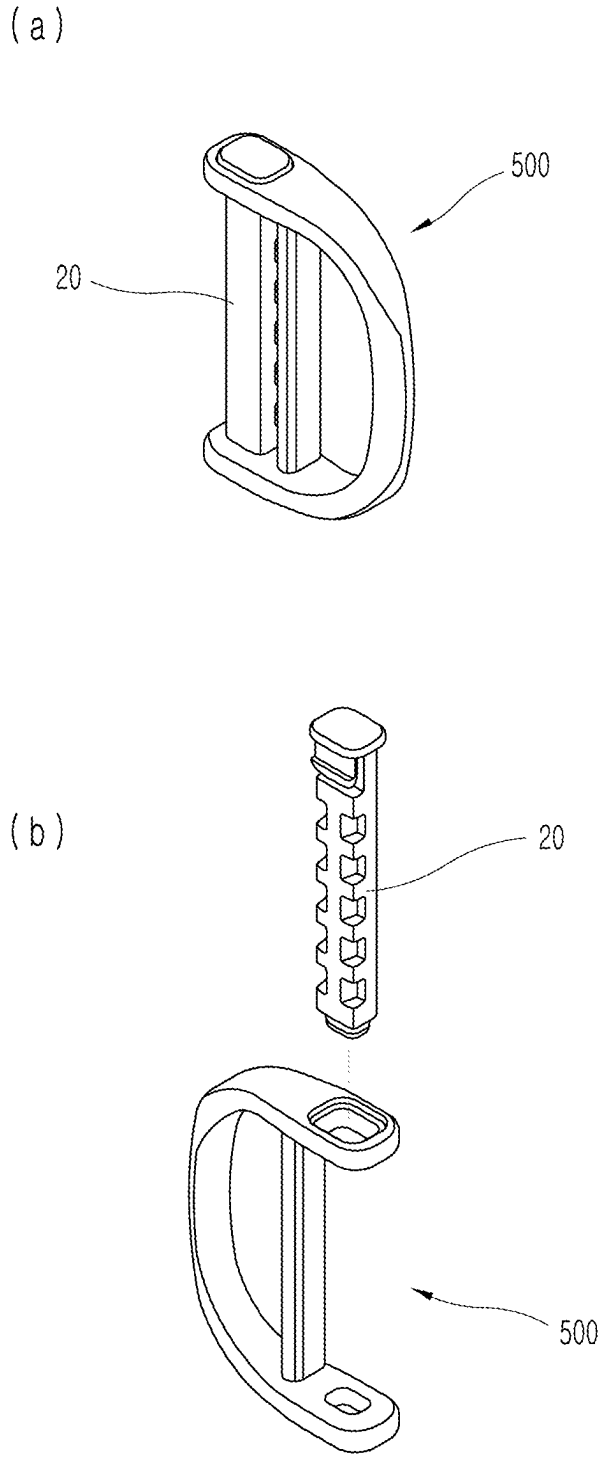


FIG. 17



STRAP BAR DEVICE OF STRAP ACCESSORY

CROSS-REFERENCE TO PRIOR APPLICATIONS

This application claims priority to Korean Patent Application No. 10-2023-0118734 (filed on Sep. 7, 2023), which is hereby incorporated by reference in its entirety.

BACKGROUND

The present invention relates to a strap bar device of a strap accessory which enables the detachable installation of a strap bar for hooking and connecting a belt or a strap of a strap accessory used by connecting the belt or the strap.

As needed, many accessories are mounted and used on backpacks, bags, hats, or clothing etc., and such accessories are connected using belts, strings, or straps.

For example, as illustrated in FIG. **1**, on a mountaineering backpack, a plurality of straps S are installed at various parts, and various types of strap accessories such as strap adjusters **100**, rings, or loops are mounted on the straps S for use according to their functions. Additionally, there are straps for fixing and buckles **200** for binding the straps.

Moreover, during activities such as camping or mountaineering, various items, such as lanterns, cups, sticks, water bottles, etc., are stored in the backpack or hung on loops using straps for portability.

Each of the plurality of straps fundamentally mounted on the backpack has one end which is sewed and fixed to the backpack, and the other end which is used by connecting other straps or strap accessories.

For the straps to be connected, strap bars that can wrap and hook the straps are needed in the strap accessories. In general, the strap bars are basically formed in most of the strap accessories which connect the straps.

That is, in the conventional connection of the strap and the strap accessory, one or more slots into which the strap can be inserted are formed, and the strap is wrapped and connected to the strap bar forming these slots.

There are two methods of connecting straps: one being to fix the strap by wrapping the strap around the strap bar and sewing it; and the other being to wrap the strap around the strap bar without fixing the strap to allow adjustment of the length.

The work of individually inserting and connecting the straps into the slots was very cumbersome. Furthermore, in case of the strap on the fixed side, it was necessary to first insert the strap into the strap accessory and wrap the strap around the strap accessory and then sew the strap, and in the state in which the strap accessory was suspended, the strap accessory was mounted on an object, such as a bag or a backpack. So, the work was very inconvenient.

On the other hand, when the strap accessory is used, the strap is pulled or a load is applied to the strap, so the load is concentrated on the strap bar where the strap is connected. So, a portion which is first damaged is the strap bar.

All items using straps become unusable when the strap bar is damaged. In addition, the strap bar is generally formed integrally with the entire accessory such as a buckle, so if the strap bar is damaged, the entire accessory must be replaced.

Therefore, when the strap bar is damaged, there is a significant economic loss, and since consumers generally do not have spare accessories on hand, they must go through a separate procedure for replacement, so there are wastes of time and manpower or the entire product must be discarded.

Specifically, if the strap is fixed to a bag or a backpack by sewing, since the entire strap must be removed, it may even damage the bag or backpack.

RELATED ART

Korean Patent No. 10-1030366 (Apr. 13, 2011)

SUMMARY

Accordingly, the present invention has been made to solve the above-mentioned problems occurring in the prior arts, and it is an objective of the present invention to provide a strap bar device capable of exchanging a strap bar which winds and connects a strap in a strap accessory using the strap.

It is another objective of the present invention to provide a strap bar device in a strap accessory, wherein the strap bar can be easily attached and detached, thereby facilitating convenient use and connection of the strap.

To accomplish the above object, according to the present invention, there is provided a strap bar device including: a strap accessory which includes two support parts facing each other to be spaced apart from each other, and a through-hole and a support groove formed in the two support parts to face each other; and a strap bar which is inserted through the through-hole and is supported in the through-hole and the support groove, wherein a strap is connected to the strap bar.

The support groove and a front end of the strap bar inserted into the support groove, and the through-hole and a rear end of the strap bar coupled to the through-hole may be formed with polygonal cross-sections which match each other.

A head groove expanded more than the through-hole may be formed on the outside of the through-hole, and a head part seated in the head groove may be expanded and formed at the rear end of the strap bar.

A coupling protrusion may be protrudingly formed at the front end of the strap bar so as to be inserted into the support groove.

A plurality of ribs may be formed on the outer surface of the strap bar.

A fixing means for fixing the strap bar on the support part may be formed on the strap bar or the support part.

The fixing means may include a hook piece which is elastically formed on one side adjacent to the outer end of the strap bar, such that when the strap bar is fully coupled to the support part, the hook piece is elastically coupled to the inside of the through-hole.

The strap accessory may be a strap adjuster which is inserted into the strap to adjust the length of the strap or to connect to another strap accessory.

The strap accessory may be a buckle for a backpack or a bag.

The strap accessory may be a loop capable of connecting various items.

According to an embodiment of the present invention, when the strap bar is damaged during the use of the strap accessory, the strap bar alone can be replaced and used without the need to exchange the entire strap accessory, thereby enabling convenient refill usage and reducing economic loss.

According to an embodiment of the present invention, before connection of the strap bar, the end of the strap is wound and sewed in advance, and then, connected to the strap bar, thereby making the sewing and connecting operations convenient.

According to an embodiment of the present invention, the exchangeably connected strap bar can be fixed in the through-hole and the support groove without rotation, thereby maintaining the connection state of the strap stably.

According to an embodiment of the present invention, the strap bar device is simple in operation since the assembly and disassembly of the strap bar can be easily performed, and can be used in safety since the strap bar can be fixed firmly by the fixing means.

The advantages of the present disclosure are not limited to the above-mentioned advantages, and other advantages, which are not specifically mentioned herein, will be clearly understood by those skilled in the art from the following description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a backpack showing an example of mounted strap accessories.

FIG. **2**, (a) is a perspective view illustrating a disassembled state and FIG. **2**, (b) is a perspective view illustrating an assembled state of the strap adjuster according to an embodiment of the present invention.

FIG. **3**, (a) is a perspective view of the disassembled state and FIG. **3**, (b) is a front view of the assembled state of the strap adjuster viewed from a different direction.

FIG. **4**, (a) is a sectional view taken along line A-A of FIG. **3**, (b), and FIG. **4**, (b) is a sectional view of the disassembled state taken along line A-A of FIG. **3**, (b).

FIG. **5**, (a) is a plan view and FIG. **5**, (b) is a side view illustrating an example of a strap bar.

FIG. **6** is a sectional view taken along line B-B of FIG. **3**, (b), showing a connected state of a strap.

FIG. **7** is a perspective view showing a buckle as a strap accessory.

FIG. **8** is an exploded perspective view of FIG. **7**.

FIG. **9** is an assembled perspective view of FIG. **7**.

FIGS. **10** to **12** are sectional views and front views illustrating a state in which the strap bar is removed from a buckle.

FIG. **13** is a perspective view illustrating a backpack as an example, to which strap accessories according to the present invention are mounted.

FIG. **14** is a perspective view illustrating a strap bar according to another embodiment of the present invention.

FIGS. **15** to **17** are perspective views illustrating other examples of applications of the strap accessories.

DETAILED DESCRIPTION

In the drawings, thicknesses of lines and sizes of constituent elements may be exaggerated for clarity and convenience in explanation.

Further, terms to be described later are defined in consideration of the functions of the present invention, and may differ depending on the intentions of a user or an operator or custom. Accordingly, such terms should be defined on the basis of the contents of the overall specification. As described above, belts or straps are attached to a hiking backpack or a bag. In the case of hiking backpack, straps can be applied for various purposes such as shoulder straps, chest straps, and waist straps. So, the straps can be applied in the concept that includes all kinds of straps and cords for connection and detachment, and hereinafter, it will be described uniformly as a strap.

The embodiments described below can be realized in various different forms. In order to more clearly describe the characteristics of the embodiments, a detailed description of matters well known to those of ordinary skill in the art to which the present embodiments belong will be omitted.

FIGS. **2** to **6** illustrate a first embodiment in which a strap bar according to the present invention is applied to a strap adjuster as a strap accessory. FIG. **2**, (a) is a perspective view illustrating a disassembled state and FIG. **2**, (b) is a perspective view illustrating an assembled state of the strap adjuster according to an embodiment of the present invention, FIG. **3**, (a) is a perspective view of the disassembled state and FIG. **3**, (b) is a front view of the assembled state of the strap adjuster viewed from a different direction, FIG. **4**, (a) is a sectional view taken along line A-A of FIG. **3**, (b), and FIG. **4**, (b) is a sectional view of the disassembled state taken along line A-A of FIG. **3**, (b), FIG. **5**, (a) is a plan view and FIG. **5**, (b) is a side view illustrating an example of a strap bar, and FIG. **6** is a sectional view taken along line B-B of FIG. **3**, (b), showing a connected state of a strap.

The strap bar device according to the present invention includes: a strap accessory which includes two support parts facing each other to be spaced apart from each other, and a through-hole and a support groove formed in the two support parts to face each other; and a strap bar which is inserted through the through-hole and is supported in the through-hole and the support groove, wherein a strap is connected to the strap bar by wrapping around the strap bar.

Referring to FIGS. **2** to **6**, the strap bar device according to the present invention includes a strap adjuster **100** as the strap accessory, and the strap bar **20** which is detachably assembled to the strap adjuster **100**.

The strap adjuster **100** generally has a strap S connected to both sides thereof, wherein one side is fixed by sewing, and the other side is adjustable in length without being fixed. That is, the strap connected to both sides are divided into a fixed end and a free end.

At least one of the strap bar connected to the strap of the free end and the strap bar connected to the strap of the fixed end may be formed as a detachable type.

Since the strap of the free end is not fixed by sewing for length adjustment, it is easily detachable from the strap adjuster. Therefore, the strap bar connected to the strap of the free end is not inconvenient in assembling work even if it is not detachably mounted. However, since the strap of the fixed end is mounted by wrapping around the fixed end and being sewed, if a user wants to replace the strap after being mounted, the entire strap must be removed. Therefore, it is more preferable to make the strap bar of the fixed end as a detachable type.

The strap adjuster **100** has opposing support parts **110** and **120** formed on both sides thereof through which the strap passes, and the strap bar **20** according to the present invention and a cross bar **130** are mounted between the support parts **110** and **120** to connect the strap.

The strap bar **20** is formed in a pin shape and is mounted on both support parts **110** and **120** of the strap adjuster **100**.

For this purpose, a through-hole **111** through which the strap bar **20** passes is formed in one of the support parts **110**, and a support groove **121** is formed in the other support part **120** to face the through-hole **111**, so that the front end of the strap bar **20** is inserted and supported.

Therefore, assembly is completed by inserting the strap bar **20** into the through-hole **111** and placing the front end in the support groove **121**.

That is, the front end of the strap bar **20** is supported in the support groove **121**, and the rear end of the strap bar **20** is coupled to be supported in the through-hole **111**.

Here, the cross-sectional shapes of the through-hole **111** and the support groove **121** are made in a polygonal shape, and coupling portions of the strap bar **20** corresponding thereto are also formed in the polygonal shape to match the through-hole **111** and the support groove **121**, so that the strap bar **20** can be stably fixed without rotation in the coupled state.

A head groove **112** expanded more than the through-hole **111** can be formed on the outside of the through-hole **111**, and a head part **21** seated in the head groove **112** can be expanded and formed at the rear end of the strap bar **20**.

Moreover, a coupling protrusion **22** is protrudingly formed at the front end of the strap bar **20**, so as to be inserted into and coupled to the support groove **121**. It is preferable that the coupling protrusion **22** is formed to be stepped from a body of the strap bar **20** and to be smaller than the body of the strap bar **20**.

The sizes and shapes of the head groove **112**, the head part **21**, the support groove **121**, the coupling protrusion **22**, and the like can be formed in various ways, and can be arbitrarily applied depending on the strap accessories applied.

For example, as illustrated in FIG. **3**, (b) and FIG. **4**, a protrusion **122** may be further formed outward from the support part **120** to sufficiently secure a space of the support groove **121** when the support groove **121** is formed. Accordingly, the head part **21** of the strap bar **20** may protrude outward from the opposing support part **110** such that the protruding shape of the head part **21** is the same as the protrusion **122**. Therefore, the protruding shapes of both support parts **110** and **120** can be symmetrically formed, thereby providing the aesthetic appearance.

The strap bar **20** may be provided with fixing means for maintaining a coupled state between the strap accessory and the strap bar **20**.

Therefore, the strap bar **20** can be fixed to the strap accessory by the fixing means or separated from the strap accessory by releasing the fixing means.

The fixing means includes: a recess **23** formed on one side near the outer end, i.e., the head part **21** of the strap bar **20**; a hook piece **24** elastically extended in the longitudinal direction inside the strap bar **20** within the recess **23**; a locking part **25** protruding above the one side from the free end of the hook piece **24**; and a coupling groove **27** formed between the head part **21** and the locking part **25**.

Therefore, when the strap bar **20** is completely coupled to the strap adjuster **100**, the support part **110** is coupled to the coupling groove **27** as the hook piece **24** is elastically retained to the inside of the through-hole **111** such that the strap bar **20** is coupled and fixed.

As illustrated in the plan view of FIG. **5**, (a), the cross-section of the strap bar **20** may be formed longer on one side like a rectangle. Specifically, the direction of the longer side coincides with the lateral direction of the hook piece **24**.

This is to form the recess **23** to form the hook piece **24** as a fixing means, thereby compensating for the point that the thickness of the corresponding part may become thin and the strength may be weakened. So, it is preferable that the fixing means is formed long in the direction in which the strap is pulled.

FIG. **6** illustrates a state in which the strap S is connected in both directions of the strap adjuster **100**, wherein one side of the strap forms the fixed end by wrapping around the strap bar **20** and being fixed with a sewing line Ss, and the other side of the strap wraps around the cross bar **130** so that two lines are extended as they are to allow adjustment of the length of the strap.

Therefore, in a case in which the strap bar **20** is damaged during the use of the strap adjuster, only the strap bar **20** can be separated and easily replaced with a new strap bar. In addition, if other parts, such as the cross bar **130**, are damaged, since the strap adjuster **100** must be separated from the strap of the fixed end, so the strap bar **20** can be easily detached, thereby facilitating the exchange of the strap adjuster **100**.

FIGS. **7** to **12** illustrate a second embodiment of the strap bar according to the present invention applied to a buckle which is widely used in a backpack, wherein FIG. **7** is a perspective view of the buckle as a strap accessory, FIG. **8** is an exploded perspective view of FIG. **7**, and FIG. **9** is a perspective view illustrating an assembled state of FIG. **7**.

Referring to FIGS. **7** to **9**, the buckle **200** as a strap accessory includes a plug member **200***a* and a socket member **200***b*, which are detachably connected to each other, and the strap is connected backwards, wherein one side of the strap is sewed and connected in a fixed state. In the drawings, it is illustrated that the strap connected to the plug member **200***a* is in a fixed state.

Facing support parts **210** and **220** are formed at the rear ends of the plug member **200***a* and the socket member **200***b*, and the strap bar **20** according to the present invention is mounted between the support parts **210** and **220** to connect the strap.

A through-hole **211** through which the strap bar **20** passes is formed in one of the support parts **210**, and a support grove **221** is formed in the other support part **220** to face the through-hole **211**, so that the front end of the strap bar **20** is inserted and supported.

Therefore, assembly is completed when the strap bar **20** is inserted through the through-hole **211** and the front end is seated in the support groove **221**.

A hook piece **24** as a fixing means is mounted at the rear end of the strap bar **20**, and is elastically coupled with the through-hole **211**.

The configuration of the strap bar **20**, the through-hole **211** and the support groove **221** in which the strap bar **20** is inserted may be made in the same manner as the configuration of the first embodiment, so a repetitive description will be omitted.

FIG. **10** to **12** are sectional views and front views illustrating a state in which the strap bar is removed from a buckle, wherein FIG. **10**, (a), FIG. **11**, (a) and FIG. **12**, (a) are sectional views taken along lines C-C, D-D, and E-E of FIG. **10**, (b), FIG. **11**, (b) and FIG. **12**, (b), respectively.

Referring to FIGS. **10** to **12**, a strap removal state will be described. In the state in which the strap bar **20** is coupled to the buckle **200**, as illustrated in FIG. **10**, (a), when a user presses the locking part **25** of the hook piece **24** in an arrow direction, the strap bar is removed out. FIG. **11** illustrates a state in which the hook piece **24** moves inside the through-hole **211**, and FIG. **12** illustrates a state in which the hook piece **24** gets completely out of the through-hole **211**.

That is, the strap bar **20** can be simply separated just by pressing and pushing the hook piece **24**.

For an efficient space utilization when the locking part **25** of the front end of the hook piece **24** is pressed, as illustrated in FIG. **5**, an inclined surface **26** may be formed on the inner side of the front end of the hook piece **24**. By forming the inclined surface **26**, a deeper rotation angle of the hook piece **24** can be secured.

FIG. **13** is a perspective view illustrating a backpack as an example, to which strap accessories according to the present invention are mounted. Referring to FIG. **13**, the strap adjuster **100** described in the first embodiment of the present

invention is mounted at the top of the left, and the buckle **200** described in the second embodiment is mounted and used at the bottom of the right.

FIG. **14** is a perspective view illustrating a strap bar according to another embodiment of the present invention. In FIG. **14**, continuous and repetitive ribs **28** are formed on the body of the strap bar **20** to increase rigidity while saving materials.

FIGS. **15** to **17** are perspective views illustrating other examples of applications of the strap accessories, wherein FIG. **15**, (a) is a perspective view of a different type of strap adjuster **300**, and FIG. **15**, (b) is a perspective view of the strap bar **20** in a disassembled state.

FIG. **16**, (a) is a perspective view illustrating a state in which the strap bar **20** of the present invention is mounted on a loop **400**, and FIG. **16**, (b) is a perspective view of the strap bar **20** in a disassembled state.

FIG. **17**, (a) is a perspective view illustrating a state in which the strap bar **20** of the present invention is mounted on a D-ring **500**, and FIG. **17**, (b) is a perspective view of the strap bar **20** in a disassembled state.

In addition, the strap bar of the present invention can be applied to various strap accessories to which straps are connected.

The above description is only exemplary, and it will be understood by those skilled in the art that the invention may be embodied in other concrete forms without changing the technological scope and essential features. Therefore, these embodiments as described above are only proposed for illustrative purposes and do not limit the present invention.

It will be apparent to those skilled in the art that a variety of modifications and variations may be made without departing the spirit and scope of the present invention as defined by the appended claims. Further, such modifications and variations should not be understood independently from the technical idea or perspective of the present invention.

What is claimed is:

1. A strap bar device comprising:

a strap accessory including:

a first support part having a through-hole extending therethrough, and

a second support part spaced apart from the first support part, the second support part including:

a first surface facing the first support part and including a support groove aligned with the through-hole, and

a second surface opposite to the first surface, wherein the support groove has a closed bottom that does not penetrate the second surface; and

a strap bar inserted through the through-hole and supported by the through-hole and the support groove, without penetrating the second support part, wherein the strap bar includes:

a head part larger than the through-hole,

a recess formed on an outer surface of the strap bar adjacent to the head part, and

a hook piece elastically extending from the head part over the recess and positioned within the recess along a longitudinal direction of the strap bar, wherein the hook piece passes through the through-hole of the first support part and engages a portion of the first support part, which faces the first surface of the second support part when the strap bar is fully coupled to the first support part,

wherein a strap is connected to the strap bar.

2. The strap bar device according to claim **1**, wherein the support groove and a front end of the strap bar inserted into the support groove, and the through-hole and a rear end of the strap bar coupled to the through-hole are formed with polygonal cross-sections which match each other.

3. The strap bar device according to claim **1**, wherein a head groove expanded more than the through-hole is formed on an outside of the through-hole, and the head part seated in the head groove is expanded and formed at a rear end of the strap bar.

4. The strap bar device according to claim **1**, wherein a coupling protrusion is protrudingly formed at a front end of the strap bar so as to be inserted into the support groove.

5. The strap bar device according to claim **1**, wherein a plurality of ribs are formed on an outer surface of the strap bar.

6. The strap bar device according to claim **1**, wherein the strap accessory is a strap adjuster which is inserted into the strap to adjust the length of the strap or to connect to another strap accessory.

7. The strap bar device according to claim **1**, wherein the strap accessory is a buckle for a backpack or a bag.

8. The strap bar device according to claim **1**, wherein the strap accessory is a loop capable of connecting various items.

* * * * *