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(54) **CAM TOOTH PRESSING QUICK AND CONVENIENT FASTENING DEVICE**

(57) A cam tooth pressing quick and convenient fastening device includes a fastener and a movable webbing assembly; one end of the fastener is provided with a movable webbing assembly, another end of the fastener is provided with a fixed webbing assembly, and a top end of the fastener is provided with a fastening structure; the fastening structure includes a base, which is installed at an intermediate position between the fixed webbing assembly and the movable webbing assembly; a connection hole is formed internally at one end of the base; a side edge is fixed on one side of a top end of the base. When fastening the movable webbing assembly, the cooperation of the limiting pin, shaft sleeve and limiting hole enables quick installation of the pressure plate. The L-shaped fastener, making the webbing can be quickly inserted or removed from a side.

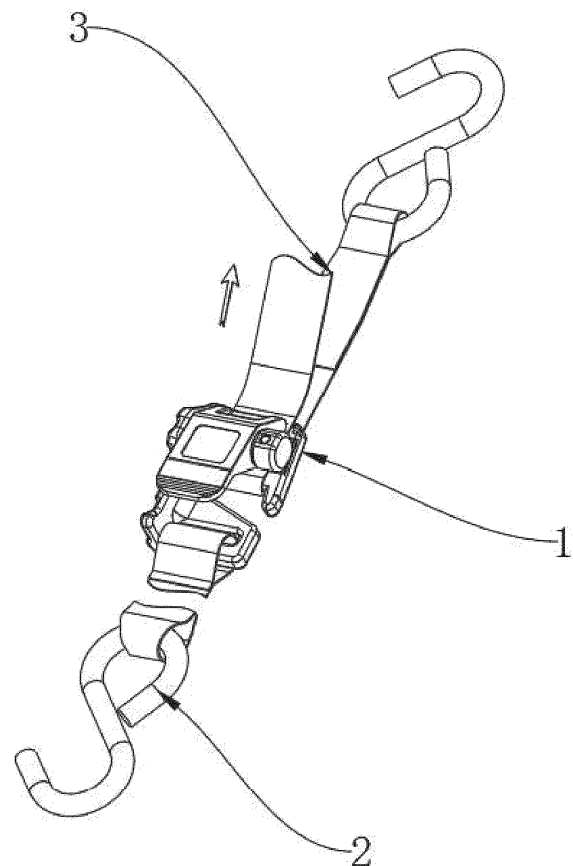


FIG. 1

Description

1. Technical Field

[0001] The invention relates to the technical field of quick and convenient fastening devices, in particular to a cam tooth pressing quick and convenient fastening device.

2. Background Art

[0002] Webbing snap fasteners are buckles used to connect and secure webbing, playing a significant role across multiple fields. They serve as tools for rapidly fixing and tightening webbing, commonly employed in industries such as apparel, luggage, and packaging—for example, in waist tie cords of trench coats, backpack shoulder straps, and cargo securing and packaging. However, traditional webbing snap fasteners still present issues in practical use.

[0003] Conventional snap fasteners on the market require users to press and hold the pressure plate during connection. The webbing end must pass through a large central hole, rotate 90 degrees, and thread through the gap between a top of pressure plate teeth and an inner bottom surface of a U-shaped base. These steps make the operation cumbersome and highly inconvenient. Therefore, a cam tooth pressing quick and convenient fastening device is necessary to address the aforementioned problems.

3. Summary of the Invention

[0004] The objective of the invention is to provide a cam tooth pressing quick and convenient fastening device, aiming to address the defect of cumbersome operation when existing conventional snap fasteners connect webbing.

[0005] In order to solve the above technical problems, the invention provides a cam tooth pressing quick and convenient fastening device, including a fastener and a movable webbing assembly; one end of the fastener is provided with a movable webbing assembly, another end of the fastener is provided with a fixed webbing assembly, and a top end of the fastener is provided with a fastening structure; the fastening structure includes a base, which is installed at an intermediate position between the fixed webbing assembly and the movable webbing assembly; a connection hole is formed internally at one end of the base; a side edge is fixed on one side of a top end of the base, and a fixed pin shaft is fixed on one side of the side edge; a reset spring is installed on an outer side of the fixed pin shaft, and a pressure plate is installed on an outer side of the reset spring; a through hole is formed inside the pressure plate; one end of the pressure plate is fixed with a fixed panel, and one end of the pressure plate is provided with cam teeth; a webbing insertion port is formed on one side of a bottom of the base; anti-slip

convex teeth are installed on one side inside the webbing insertion port, and a second limiting edge is provided at one end of the webbing insertion port; a first limiting edge is provided on one side of one end of the base, and anti-slip teeth are arranged on a surface of one end inside the base.

[0006] Preferably, a limiting hole is formed internally at one end of the fixed pin shaft; a shaft sleeve is installed on an outer side of one end of the through hole, and a through slot is formed inside the shaft sleeve; a limiting pin is installed inside the through slot, and one end of the limiting pin penetrates the through slot and inserts into the limiting hole.

[0007] Preferably, the limiting pin penetrates the through slot and inserts into the limiting hole, forming a limiting structure between the limiting pin and the limiting hole;

[0008] Preferably, the fixed pin shaft is inserted into the through hole, forming a movable connection between the fixed pin shaft and the through hole.

[0009] Preferably, the anti-slip teeth are arranged in multiple groups, and the multiple groups of anti-slip teeth are equally spaced at one end of an inner surface of the fastener;

[0010] Preferably, one end of the reset spring engages a bottom end of the pressure plate, forming a telescopic structure between the reset spring and the pressure plate.

[0011] Compared with the prior art, the invention has the following advantages:

By providing the fastening structure, when fastening the movable webbing assembly, the cooperation of the limiting pin, shaft sleeve and limiting hole enables quick installation of the pressure plate, making the installation of the pressure plate more convenient. Moreover, through the L-shaped design of the fastener, the webbing of the movable webbing assembly can be quickly inserted or removed from a side, making installation and removal more convenient.

[0012] Furthermore, through the combined use of the reset spring, cam teeth and limiting hole, after the webbing tightens the goods, the cooperation between the cam teeth and anti-slip teeth can clamp the webbing at one end of the movable webbing assembly, making the webbing fixation more convenient and achieving better fastening effects.

4. Brief Description of Accompany Drawings

[0013] In order to illustrate the preferred embodiment of the invention or the technical scheme more clearly, the technical scheme of the preferred embodiment or the figures required by the prior art is further described briefly. Obviously, only partial embodiments of the invention are shown and the actual structure is not limited thereto. It is to be understood by those skilled in the art that other drawings can be obtained based on the drawings of the invention with non-creative labor.

FIG. 1 is a three-dimensional structural diagram of a fastener of the invention;

FIG. 2 is a first exploded three-dimensional structural diagram of a fastener of the invention;

FIG. 3 is a second exploded three-dimensional structural diagram of the fastener of the invention;

FIG. 4 is a side view of the invention;

FIG. 5 is a three-dimensional structural diagram of a base according to the invention;

FIG. 6 is a three-dimensional structural diagram of a pressure plate of the invention;

FIG. 7 is an exploded three-dimensional structural diagram of a removable pin of the invention;

FIG. 8 is a three-dimensional structural diagram of a U-shaped base of the invention.

[0014] As shown in the accompanying drawings:

1 fastener, 2 fixed webbing assembly, 3 movable webbing assembly, 4 fastening structure, 401 base, 402 connection hole, 403 side edge, 404 fixed pin shaft, 405 limiting hole, 406 reset spring, 407 pressure plate, 408 limiting pin, 409 shaft sleeve, 4010 through slot, 4011 cam tooth, 4012 through hole, 4013 webbing insertion port, 4014 first limiting edge, 4015 anti-slip teeth, 4016 fixed panel, 4018 second limiting edge, 4019 anti-slip convex tooth.

5. Specific Embodiment of the invention

[0015] The technical scheme of the invention is further described clearly and detailedly hereinafter with reference to the drawings. Obviously, only partial embodiments of the invention are shown and the actual structure is not limited thereto. All other embodiments, which can be obtained by those skilled in the art without making any creative effort based on the embodiments in the present invention, shall all fall within the protective scope of the invention.

[0016] The embodiment of the invention provides a cam tooth pressing quick and convenient fastening device. As shown from FIG. 1 to FIG. 8, it includes a fastener 1 and a movable webbing assembly 3; one end of the fastener 1 is provided with a movable webbing assembly 3, an other end of the fastener 1 is provided with a fixed webbing assembly 2, and a top end of the fastener 1 is provided with a fastening structure 4; a top end of the fastener 1 is provided with the fastening structure 4; the fastening structure 4 includes a base 401, which is installed at an intermediate position between the fixed webbing assembly 2 and the movable webbing assembly 3; a connection hole 402 is formed internally at one end of the base 401; a side edge 403 is fixed on one

side of a top end of the base 401, and a fixed pin shaft 404 is fixed on one side of the side edge 403; a reset spring 406 is installed on an outer side of the fixed pin shaft 404, and a pressure plate 407 is installed on an outer side of the reset spring 406; a through hole 4012 is formed inside the pressure plate 407; one end of the pressure plate 407 is fixed with a fixed panel 4016, and one end of the pressure plate 407 is provided with cam teeth 4011; a webbing insertion port 4013 is formed on one side of a bottom of the base 401; anti-slip convex teeth 4019 are installed on one side inside the webbing insertion port 4013, and a second limiting edge 4018 is provided at one end of the webbing insertion port 4013; the use of the second limiting edge 4018 prevents force exertion and prevents the webbing from sliding out sideways; a first limiting edge 4014 is provided on one side of one end of the base 401, and anti-slip teeth 4015 are arranged on a surface of one end inside the base 401; a limiting hole 405 is formed internally at one end of the fixed pin shaft 404; a shaft sleeve 409 is installed on an outer side of one end of the through hole 4012, and a through slot 4010 is formed inside the shaft sleeve 409; a limiting pin 408 is installed inside the through slot 4010, and one end of the limiting pin 408 penetrates the through slot 4010 and inserts into the limiting hole 405; the limiting pin 408 penetrates the through slot 4010 and inserts into the limiting hole 405, forming a limiting structure between the limiting pin 408 and the limiting hole 405; the fixed pin shaft 404 is inserted into the through hole 4012, forming a movable connection between the fixed pin shaft 404 and the through hole 4012; the anti-slip teeth 4015 are arranged in multiple groups, and the multiple groups of anti-slip teeth 4015 are equally spaced at one end of an inner surface of the fastener 1; one end of the reset spring 406 engages a bottom end of the pressure plate 407, forming a telescopic structure between the reset spring 406 and the pressure plate 407.

[0017] In a further preferred Embodiment 1 of the invention, as shown from FIG. 1 to FIG. 6, when tightening goods, first fix one end of the fixed webbing assembly 2 to the connection hole 402. After fixation, press the fixed panel 4016 to enable the pressure plate 407 to compress the reset spring 406 for compression, thereby opening a gap between the cam teeth 4011 at one end of the pressure plate 407 and the anti-slip teeth 4015. Since the base 401 is L-shaped and the webbing insertion port 4013 is opened on one side of the base 401, the webbing at one end of the movable webbing assembly 3 is passed through the webbing insertion port 4013 on one side of the base 401. Then, pull one end of the webbing to tighten the goods. After tightening, release the pressing force on the fixed panel 4016, under the action of the reset spring 406, the cam teeth 4011 will press and fix webbing on one end of the movable webbing assembly 3. According to the cam mechanism principle and combined with the figures, the webbing is firmly clamped to complete the bundling. The second limiting edge 4018 prevents force exertion and avoids the webbing sliding out sideways from the

webbing insertion port 4013. The anti-slip convex teeth 4019 increase the friction of the webbing, reducing slip-page. To unbind, press the fixed panel 4016 again to quickly release the bundling, making webbing installation more convenient and operation more efficient.

[0018] In the further preferred Embodiment 2 of the invention, as shown in FIG. 7 and FIG. 8, when fixing the webbing, first secure the fixed webbing assembly 2. For fixing the movable webbing assembly 3, since the fixed pin shaft 404 is movably connected to pin shaft activity holes 4017, and the base 401 is U-shaped with the webbing insertion port 4013 set on one side of a bottom end of the base 401, when fixing the webbing on one end of the movable webbing assembly 3, press the fixed panel 4016 to open a gap between the cam teeth 4011 at one end of the pressure plate 407 and the anti-slip teeth 4015. Then insert one end of the movable webbing assembly 3 from one side of the fastener 1 into a middle position between the cam teeth 4011 and the anti-slip teeth 4015. Tighten the webbing to secure the goods, then release the pressure plate 407 to allow the cam teeth 4011 to clamp one end of the webbing on one end of the movable webbing assembly 3, completing the fastening. Through the use of the above two embodiments, the cumbersome operation of traditional fastening buckles for webbing is resolved, achieving faster and more convenient webbing fastening.

[0019] The foregoing descriptions merely illustrate specific embodiments of the present invention. However, the scope of protection is not limited thereto. Any modification or replacement conceivable by those skilled in the art within the technical scope disclosed herein shall be encompassed within the protection scope of the invention. Consequently, the scope of protection shall be defined by the appended claims.

Claims

1. A cam tooth pressing quick and convenient fastening device, including a fastener (1) and a movable webbing assembly (3);

one end of the fastener (1) is provided with a movable webbing assembly (3), an other end of the fastener (1) is provided with a fixed webbing assembly (2), and a top end of the fastener (1) is provided with a fastening structure (4); the fastening structure (4) includes a base (401), which is installed at an intermediate position between the fixed webbing assembly (2) and the movable webbing assembly (3); a connection hole (402) is formed internally at one end of the base (401); a side edge (403) is fixed on one side of a top end of the base (401), and a fixed pin shaft (404) is fixed on one side of the side edge (403); a reset spring (406) is installed on an outer side of the fixed pin shaft (404), and a

pressure plate (407) is installed on an outer side of the reset spring (406); a through hole (4012) is formed inside the pressure plate (407); one end of the pressure plate (407) is fixed with a fixed panel (4016), and one end of the pressure plate (407) is provided with cam teeth (4011); a webbing insertion port (4013) is formed on one side of a bottom of the base (401); anti-slip convex teeth (4019) are installed on one side inside the webbing insertion port (4013), and a second limiting edge (4018) is provided at one end of the webbing insertion port (4013); a first limiting edge (4014) is provided on one side of one end of the base (401), and anti-slip teeth (4015) are arranged on a surface of one end inside the base (401).

2. The cam tooth pressing quick and convenient fastening device of claim 1, wherein a limiting hole (405) is formed internally at one end of the fixed pin shaft (404); a shaft sleeve (409) is installed on an outer side of one end of the through hole (4012), and a through slot (4010) is formed inside the shaft sleeve (409); a limiting pin (408) is installed inside the through slot (4010), and one end of the limiting pin (408) penetrates the through slot (4010) and inserts into the limiting hole (405).
3. The cam tooth pressing quick and convenient fastening device of claim 2, wherein the limiting pin (408) penetrates the through slot (4010) and inserts into the limiting hole (405), forming a limiting structure between the limiting pin (408) and the limiting hole (405).
4. The cam tooth pressing quick and convenient fastening device of claim 3, wherein the fixed pin shaft (404) is inserted into the through hole (4012), forming a movable connection between the fixed pin shaft (404) and the through hole (4012).
5. The cam tooth pressing quick and convenient fastening device of claim 3, wherein the anti-slip teeth (4015) are arranged in multiple groups, and the multiple groups of anti-slip teeth (4015) are equally spaced at one end of an inner surface of the fastener (1).
6. The cam tooth pressing quick and convenient fastening device of claim 1, wherein one end of the reset spring (406) engages a bottom end of the pressure plate (407), forming a telescopic structure between the reset spring (406) and the pressure plate (407).

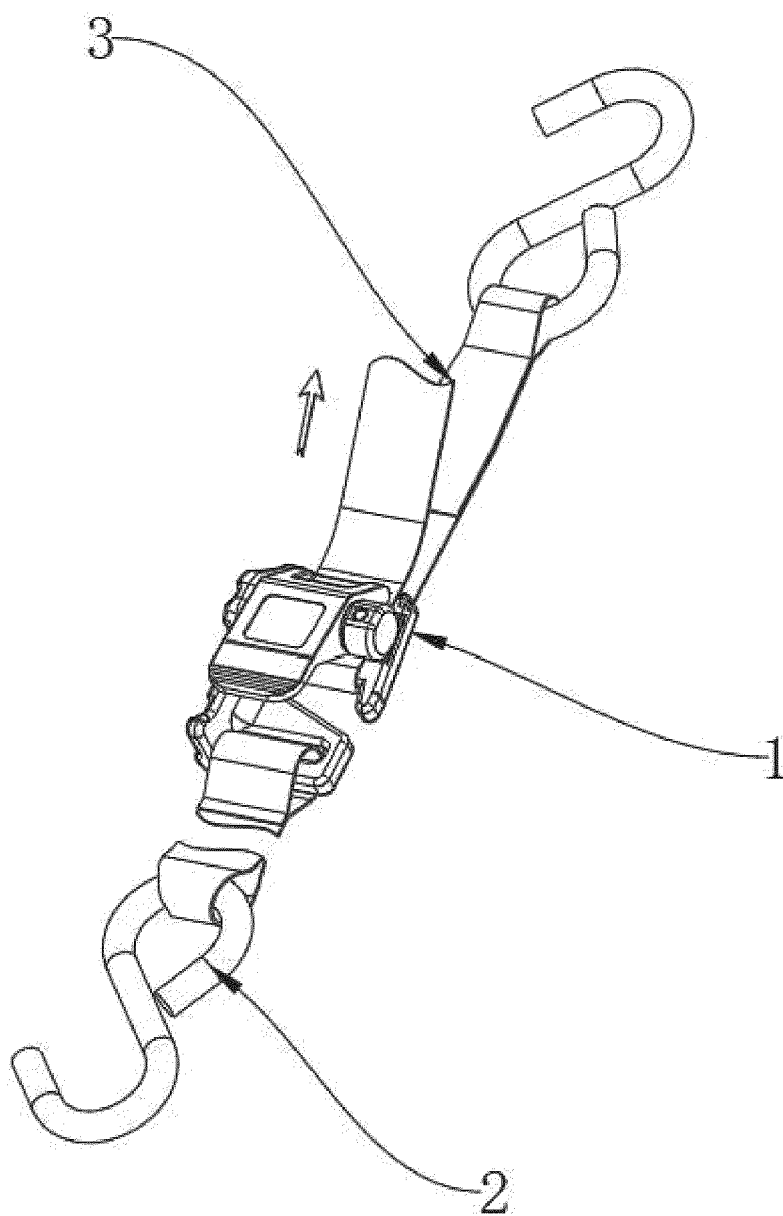


FIG. 1

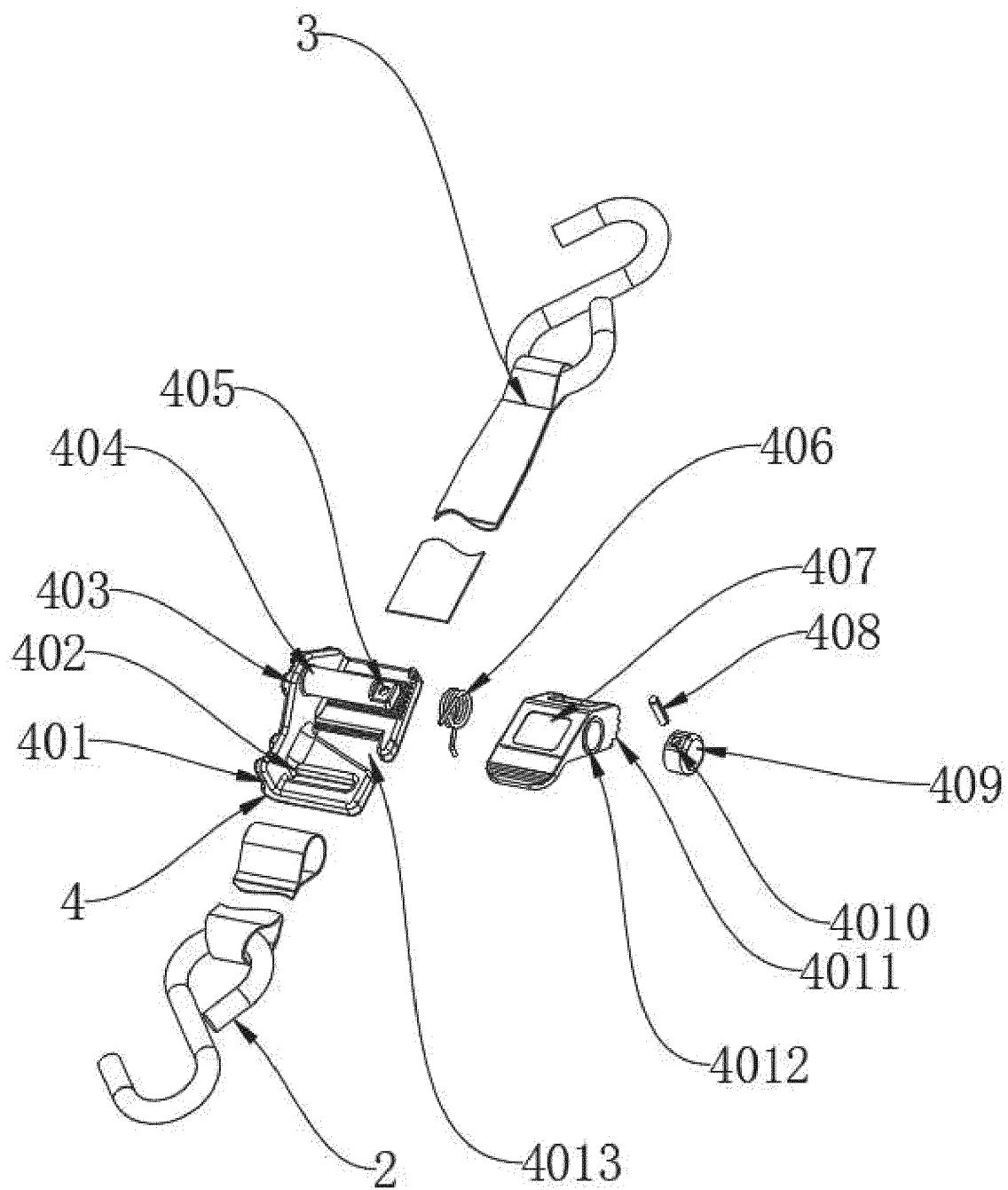


FIG. 2

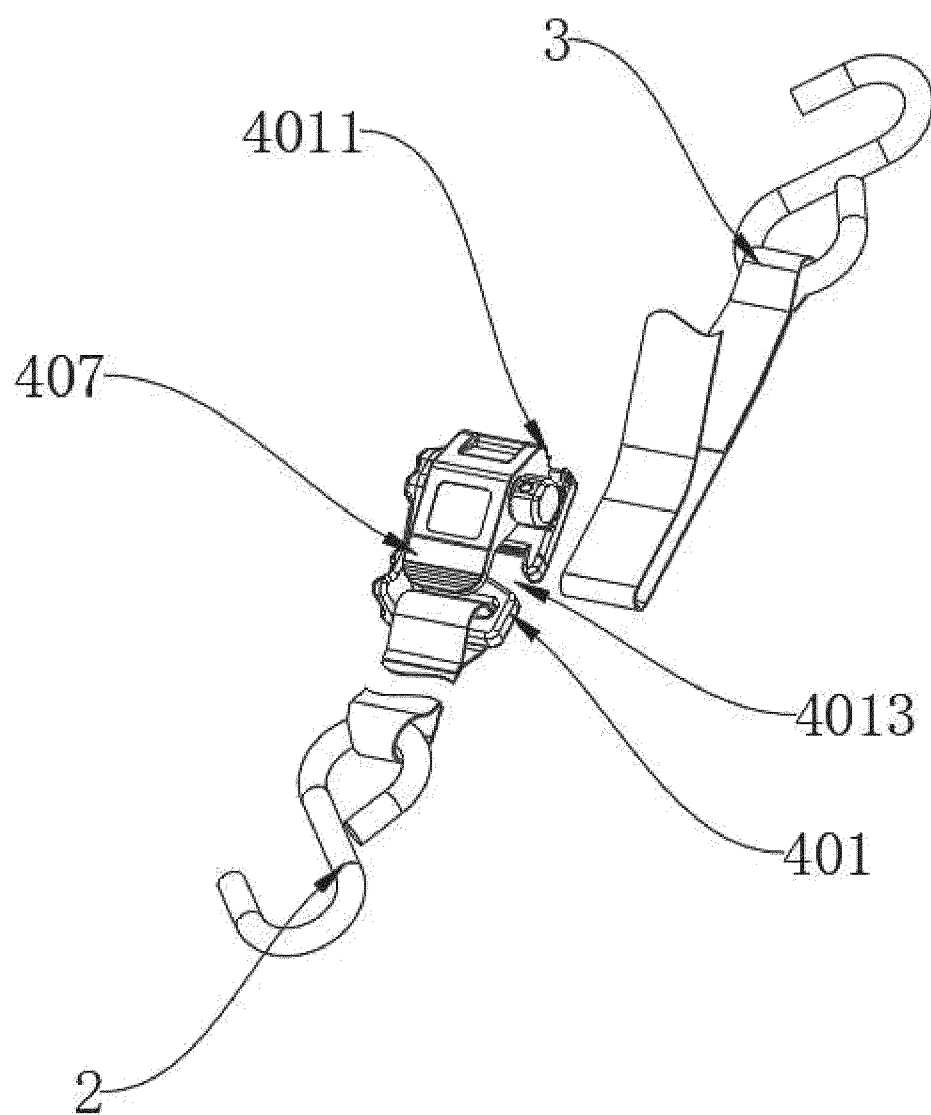


FIG. 3

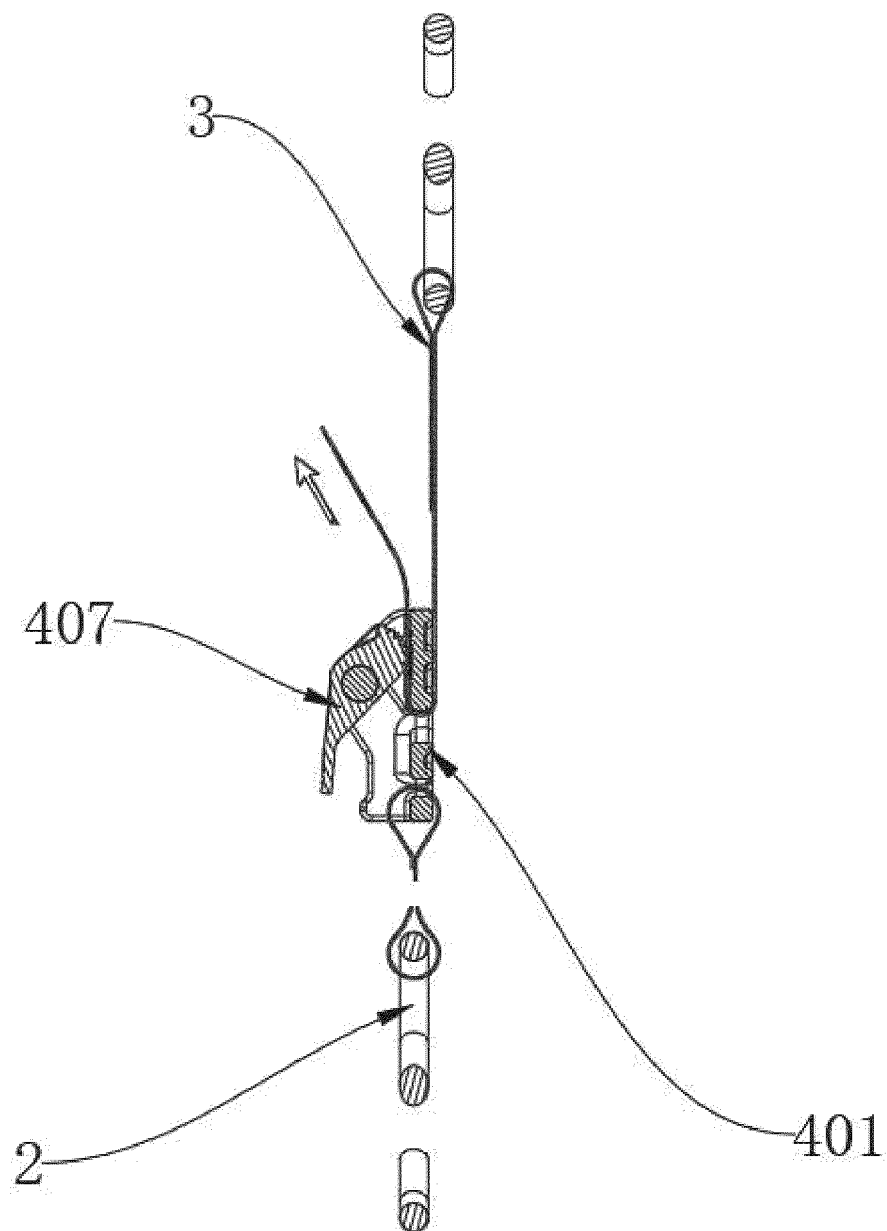


FIG. 4

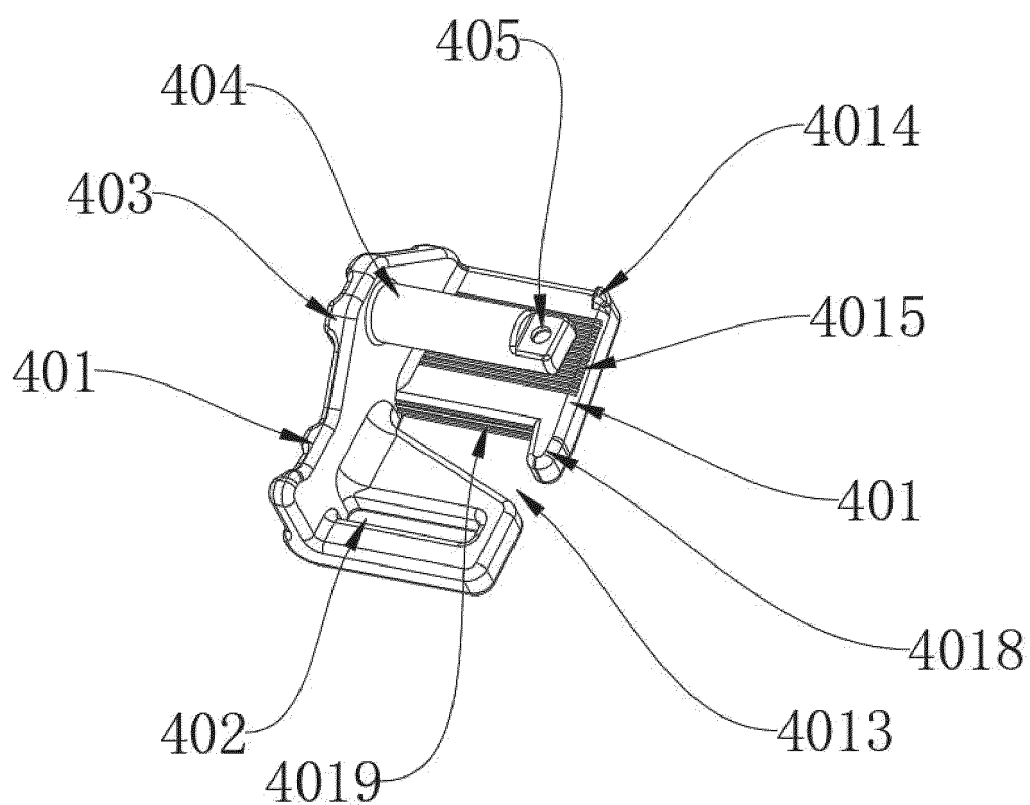


FIG. 5

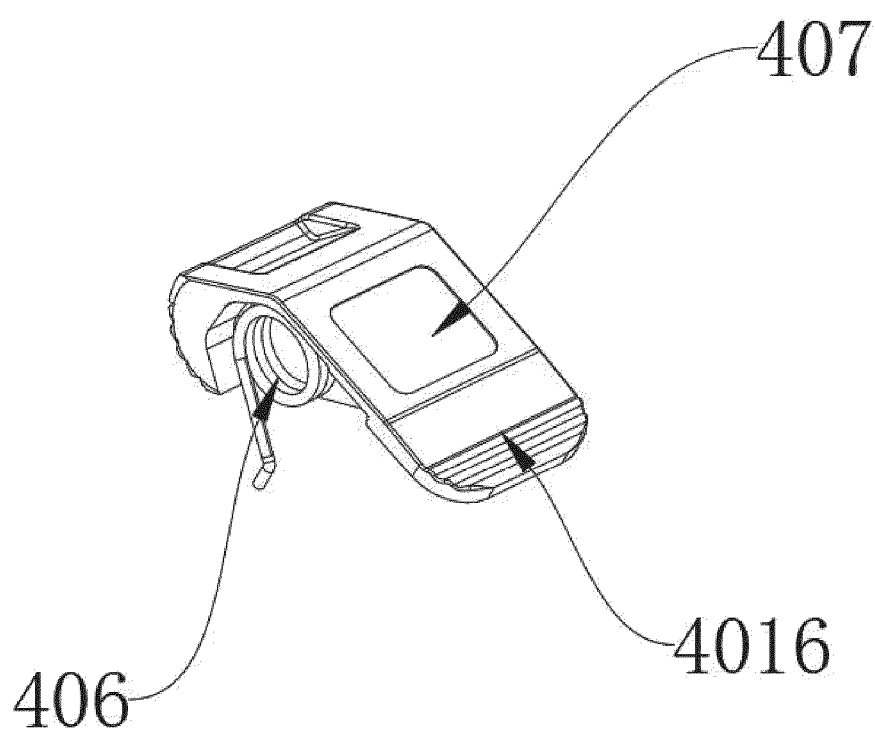


FIG. 6

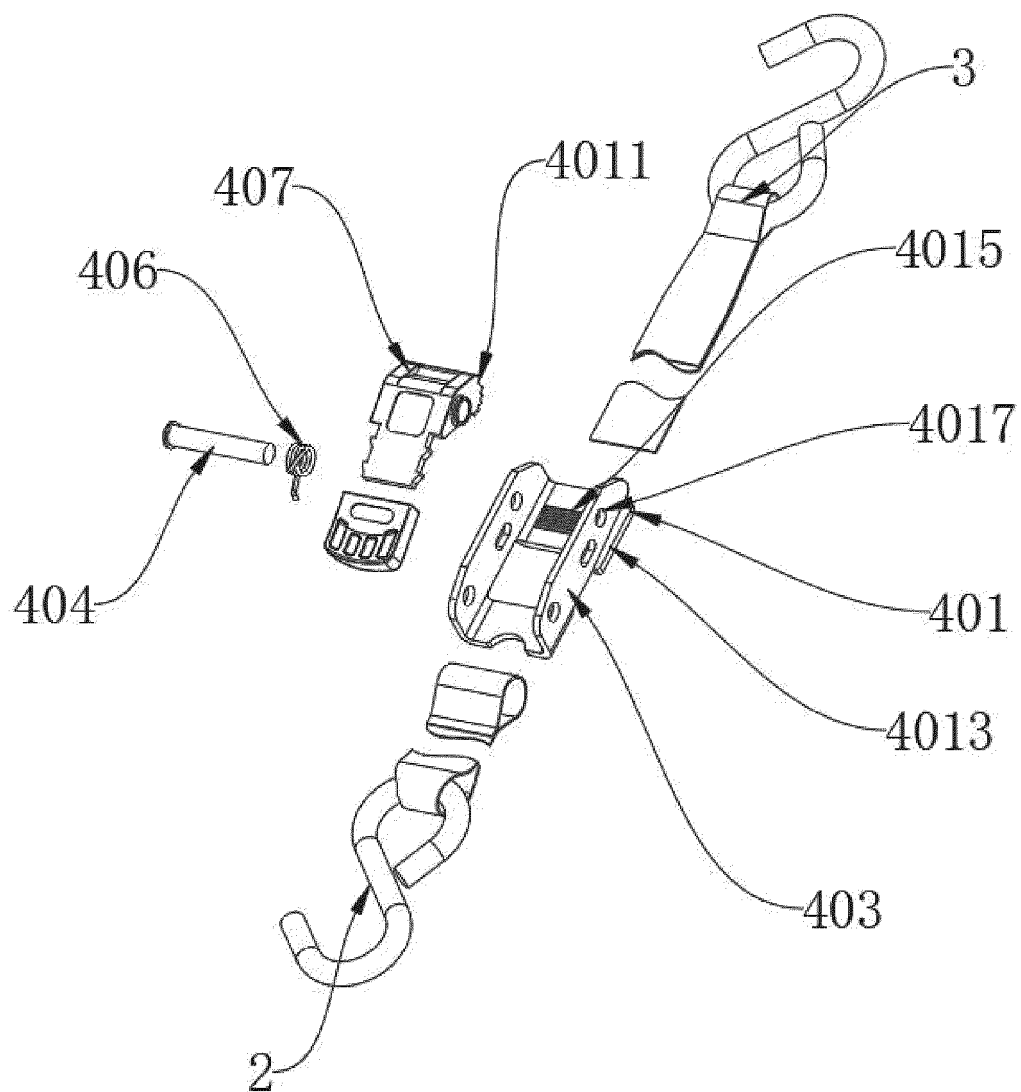


FIG. 7

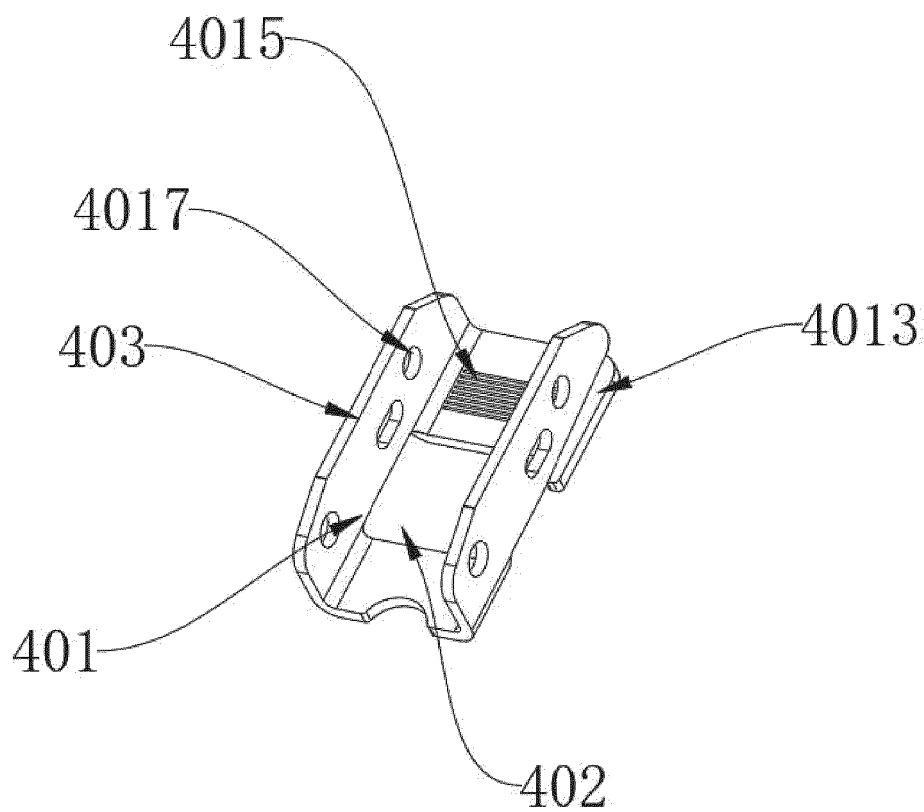


FIG. 8



EUROPEAN SEARCH REPORT

Application Number

EP 25 17 8872

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 2 622 293 A (WERMLINGER OSCAR R) 23 December 1952 (1952-12-23)	1,6	INV.
A	* column 1, line 51 - column 4, line 28 * -----	2-5	A44B11/12 A44B11/14 A44B11/16
A	US 2024/138530 A1 (LU JUNG-WEN [TW]) 2 May 2024 (2024-05-02) * the whole document * -----	1-6	
A	DE 20 2006 011017 U1 (HUANG HAN CHING [TW]) 12 October 2006 (2006-10-12) * paragraphs [0036] - [0038]; figures 6-9 * -----	1-6	
			TECHNICAL FIELDS SEARCHED (IPC)
			A44B B60P B62J
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		29 September 2025	Breuil, Paul
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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29-09-2025

10	Patent document cited in search report	Publication date	Patent family member(s)	Publication date
	US 2622293	A	23-12-1952	NONE
15	US 2024138530	A1	02-05-2024	NONE
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