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An automatic winding ratchet wheel tensioner

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A b s t r a c t

The disclosure is an automatic winding ratchet wheel tensioner, comprising: A winding assembly: said winding assembly consists of a winding drum and a winding spring pin; said winding spring pin stretches into the winding drum; and said winding spring pin is equipped with a winding spring for winding the drawstring; a tensioning assembly: said tensioning assembly consists of reels, a ratchet wheel, a handle plate, a retaining plate and a base; said reels are two in number, these two said reels have a certain gap between them, a drawstring: said drawstring is wrapped on winding drum; the free end of said drawstring passes through the gap between two said reels, goes from one side of one reel to the bottom of said winding drum, and is connected with a hook. The disclosure has the following beneficial effects: this tensioner is convenient to bind the goods, the binding efficiency is high, the use is convenient, the structure of the winding assembly is convenient to automatically wind the drawstring, and this tensioner is especially suitable for long drawstring status and easy to operate.

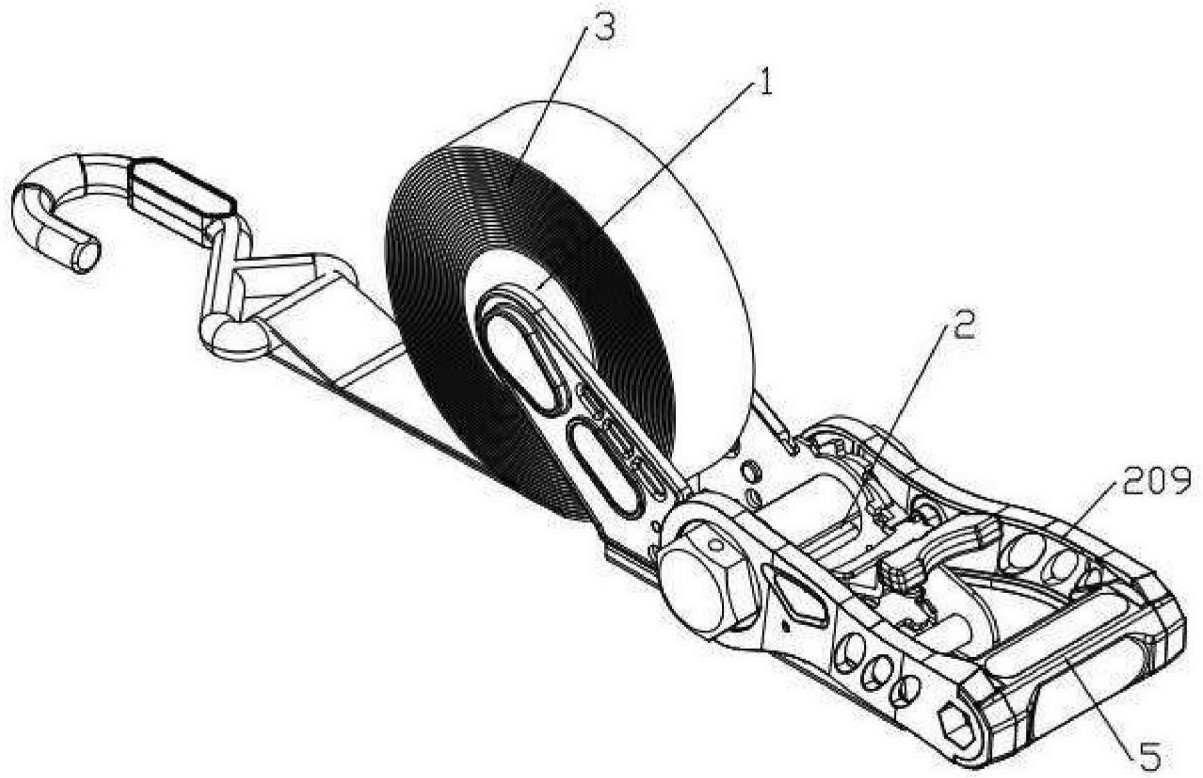


Figure 1

Description

An automatic winding ratchet wheel tensioner

Technology Field

The disclosure refer to the field of the structure of tensioner, especially refer to an automatic winding ratchet wheel tensioner.

Technology Background

Tensioner as a bundling tool, in the logistics industry, family travel, the company's warehousing industry inside the factory needs to be bundled goods is widely used. In the course of use, it needs longer length of bundling belt for large-scale goods, resulting in complicated tape-storing and unwinding, easy winding, low efficiency of bundling and inconvenient storage. Therefore, we designed an automatic winding ratchet wheel tensioner .

Summary of the Invention

The disclosure is aim to solve the above problem with providing an automatic winding ratchet wheel tensioner.

The disclosure to achieve the purpose by the following technical solutions:

An automatic winding ratchet wheel tensioner, which is characterized in that, it consists of:

A winding assembly: said winding assembly consists of a winding drum and a winding spring pin; said winding spring pin stretches into the winding drum; and said winding spring pin is equipped with a winding spring for winding the drawstring;

A tensioning assembly: said tensioning assembly consists of reels, a ratchet wheel, a handle plate, a retaining plate and a base; said reels are two in number, these two said reels have a certain gap between them, and both ends match said ratchet wheel respectively; said base supports both ends of the reels; both ends of the reels respectively stretch towards two outer sides of said base and match the handle; the front end of said base is connected with said winding spring pin; one side of said ratchet wheel is equipped with a handle plate and a retaining plate; said handle plate is connected with a plate torsional spring for reset; and said retaining plate is connected with a retaining torsional spring for reset.

A drawstring: said drawstring is wrapped on winding drum; the free end of said drawstring

Description

passes through the gap between two said reels, goes from one side of one reel to the bottom of said winding drum, and is connected with a hook.

Furthermore, said base consists of side plates and a base plate, said side plates are two in number and respectively molded at both sides of said base plate; said side plate is divided into two sections in broken line form; the front end of the inclined section of said side plate is equipped with a winding spring pin stopper section for fixing and installing the winding spring pin; the horizontal section of said side plate is equipped with a reel mounting hole for mounting the reel, a retaining plate mounting groove for mounting the retaining plate, and a fixed hook pin mounting hole for mounting the fixed hook pin.

Furthermore, said winding spring pin consists of an installation section and a hinge pin; said hinge pin and said installation section are integrated into one piece; said installation section and the side plate winding spring pin stopper section at one side of said base match each other for installation; said hinge pin passes through the winding drum and is connected with the side plate at the other side of said base.

Said winding spring is installed on said hinge pin.

Furthermore, said handle consists of the handle body, said handle body are drilled with a reel mounting hole, one cam for pushing the retaining plate is equipped under said reel mounting hole; a plate torsional spring connecting section is equipped in the middle of said handle body; and one handle seat connection section for connecting the handle seat is equipped at the rear end of said handle body.

Furthermore, said retaining plate consists of the retaining plate body; stopper sections for stopping the ratchet wheel are equipped at both sides of said retaining plate body; the surface of said retaining plate body has a semicircular protrusion; said protrusion is installed with a retaining torsional spring; and one end of said retaining torsional spring is connected with said side plate.

Furthermore, said handle plate consists of the handle plate body; the front end of said handle plate body has a toggle section; the connection between said toggle section and said handle plate body has an arc-shaped supporting section; and the rear end of said handle plate body has a pushing section.

Furthermore, said ratchet wheel consists of the ratchet wheel body, and said ratchet wheel body

Description

has two reel holes for matching said reel.

Furthermore, both ends of said reel are equipped with end caps for matching two said reels.

Furthermore, said base has a protection cover under it.

Furthermore, said winding drum and said reel are arranged in parallel.

By adopting the structure, one end of said drawstring is fixed onto said winding drum; the other end of said drawstring is the free end which passes through the gap between two said reels and goes under the bottom of said winding drum and is connected with a hook; during the use, said hook is connected with the goods; said fixed hook pin has another drawstring for connecting the fixed hook; if binding is necessary, fix the hook at one end of the fixed hinge pin, press the handle plate to rotate the reel, wrap the drawstring onto said reel; said retaining plate can lock the teeth of ratchet wheel to prevent the reverse movement of ratchet wheel and tension the drawstring by the free end; if it is necessary to wind the drawstring, jack up said retaining plate, automatically wind the drawstring under the function of winding spring in the winding drum, and wrap the drawstring onto said winding drum.

The disclosure has the following beneficial effects: this tensioner is convenient to bind the goods, the binding efficiency is high, the use is convenient, the structure of the winding assembly is convenient to automatically wind the drawstring, and this tensioner is especially suitable for long drawstring status and easy to operate.

Brief Description of the Drawings

FIG 1 is a tri-dimensional structural chart of the utility model;

FIG 2 is an assembly structural chart of winding assembly and tensioning assembly of the utility model;

FIG 3 is a tri-dimensional structural chart of the base of the utility model;

FIG 4 is a structural chart of the handle of the utility model;

FIG 5 is a structural chart of the winding spring pin of the utility model;

FIG 6 is a structural chart of the retaining plate of the utility model;

FIG 7 is a structural chart of the handle plate of the utility model;

FIG 8 is a structural chart of the ratchet wheel of the utility model.

Detailed Description of the Preferred Embodiments

Description

As Fig.1-Fig.8, the disclosure provide an automatic winding ratchet wheel tensioner, which comprising:

A winding assembly 1: said winding assembly 1 consists of a winding drum 101 and a winding spring pin 102; said winding spring pin 102 stretches into the winding drum 101; and said winding spring pin 102 is equipped with a winding spring for winding the drawstring 3;

A tensioning assembly 2: said tensioning assembly 2 consists of reels 201, a ratchet wheel 202, a handle plate 204, a retaining plate 207 and a base 208; said reels 201 are two in number, these two said reels 201 have a certain gap between them, and both ends match said ratchet wheel 202 respectively; the reels 201 preferably has a one-third arc of a cross section and a flat bottom surface. The structure facilitates the passing of the drawstring 3 and facilitates the winding during use, said base 208 supports both ends of the reels 201; both ends of the reels 201 respectively stretch towards two outer sides of said base 208 and match the handle 209; the front end of said base 208 is connected with said winding spring pin 102; one side of said ratchet wheel 202 is equipped with a handle plate 204 and a retaining plate 207; the handle plate 204 facilitates toggle the teeth of the ratchet wheel 202 to rotate the ratchet wheel 202. In this case, the retaining plate 207 can be caught under the teeth of the ratchet wheel 202 to prevent the ratchet wheel 202 from backing out, said handle plate 204 is connected with a plate torsional spring 205 for reset; and said retaining plate 207 is connected with a retaining torsional spring 206 for reset.

A drawstring 3: said drawstring 3 is wrapped on winding drum 101; the free end of said drawstring 3 passes through the gap between two said reels 201, goes from one side of one reel 201 to the bottom of said winding drum 101, and is connected with a hook, so that the ratchet wheel 202 can be wound around the reel 201.

To facilitate the installation and support of the tensioning assembly 2, take up the winding assembly 1, said base 208 consists of side plates 2082 and a base plate 2081, said side plates 2082 are two in number and respectively molded at both sides of said base plate 2081; said side plate 2082 is divided into two sections in broken line form; the front end of the inclined section of said side plate 2082 is equipped with a winding spring pin stopper 2083 section for fixing and installing the winding spring pin 102; the horizontal section of said side plate 2082 is equipped with a reel mounting hole 2084 for mounting the reel 201, a retaining plate mounting groove 2085 for mounting

Description

the retaining plate 207, and a fixed hook pin mounting hole 2086 for mounting the fixed hook pin 4.

For ease of installation winding spring pin 102, said winding spring pin 102 consists of a installation section 1022 and a hinge pin 1021; said hinge pin 1021 and said installation section 1022 are integrated into one piece; said installation section 1022 and the side plate 208 winding spring pin stopper 2083 section at one side of said base 2082 match each other for installation; said hinge pin passes 1021 through the winding drum 101 and is connected with the side plate 2082 at the other side of said base 208, said winding spring is installed on said hinge pin 1021.

Furthermore, said handle 209 consists of the handle body 2091, said handle body 2091 are drilled with a reel mounting hole 2084, one cam 2092 for pushing the retaining plate 207 is equipped under said reel mounting hole 2084; a plate torsional spring 205 connecting section is equipped in the middle of said handle body 2091; and one handle seat connection section 2095 for connecting the handle seat 5 is equipped at the rear end of said handle body 2091, easy to install the handle seat 5, capable of supporting two handles, when the need to wind up, the handle 209 is pulled up, then the cam 2092 will stop the retaining plate 207 open, the coil spring automatically retracts the drawstring 3.

Said retaining plate 207 consists of the retaining plate body 2071; stopper sections 2072 for stopping the ratchet wheel 202 are equipped at both sides of said retaining plate body 2071; the surface of said retaining plate body 2071 has a semicircular protrusion 2073; said protrusion 2073 is installed with a retaining torsional spring 206; and one end of said retaining torsional spring 206 is connected with said side plate 2082, the retaining torsion spring 206 can reset the retaining plate 207 to facilitate the stopper sections 2072 to limit the ratchet wheel 202.

Said handle plate 204 consists of the handle plate body 2041; the front end of said handle plate body 2041 has a toggle section 2043; the connection between said toggle section 2043 and said handle plate body 2041 has an arc-shaped supporting section 2044; and the rear end of said handle plate body 2041 has a pushing section 2042.

Said ratchet wheel 202 consists of the ratchet wheel body 2021, and said ratchet wheel body 2021 has two reel 201 holes for matching said reel 201, both ends of said reel 201 are equipped with end caps 203 for matching two said reels 201.

Said base 208 has a protection cover under it, the protection cover is used to protect the base

Description

208.

By adopting the structure, one end of said drawstring 3 is fixed onto said winding drum 101; the other end of said drawstring 3 is the free end which passes through the gap between two said reels 201 and goes under the bottom of said winding drum 101 and is connected with a hook; during the use, said hook is connected with the goods; said fixed hook pin 4 has another drawstring 3 for connecting the fixed hook; if binding is necessary, fix the hook at one end of the fixed hinge pin 1021, press the handle plate 204 to rotate the reel 201, wrap the drawstring 3 onto said reel 201; said retaining plate 201 can lock the teeth of ratchet wheel 202 to prevent the reverse movement of ratchet wheel and tension the drawstring 3 by the free end; if it is necessary to wind the drawstring 3, jack up said retaining plate 207, automatically wind the drawstring 3 under the function of winding spring in the winding drum 101, and wrap the drawstring 3 onto said winding drum 101.

The basic principles, major features and advantages of the present invention have been shown and described above. It should be understood by those skilled in the art that the present disclosure is not limited to the above embodiments, and the description of the embodiments and the specification only illustrate the principle of the present disclosure. Without departing from the spirit and scope of the present disclosure, There are various changes and improvements to the novelty, which fall within the scope of the claimed invention. The protection scope of the present invention is defined by the appended claims and their effects.

Claims

1. An automatic winding ratchet wheel tensioner, which is characterized in that, it consists of:

A winding assembly: said winding assembly consists of a winding drum and a winding spring pin; said winding spring pin stretches into the winding drum; and said winding spring pin is equipped with a winding spring for winding the drawstring;

A tensioning assembly: said tensioning assembly consists of reels, a ratchet wheel, a handle plate, a retaining plate and a base; said reels are two in number, these two said reels have a certain gap between them, and both ends match said ratchet wheel respectively; said base supports both ends of the reels; both ends of the reels respectively stretch towards two outer sides of said base and match the handle; the front end of said base is connected with said winding spring pin; one side of said ratchet wheel is equipped with a handle plate and a retaining plate; said handle plate is connected with a plate torsional spring for reset; and said retaining plate is connected with a retaining torsional spring for reset.

A drawstring: said drawstring is wrapped on winding drum; the free end of said drawstring passes through the gap between two said reels, goes from one side of one reel to the bottom of said winding drum, and is connected with a hook.

2. An automatic winding ratchet wheel tensioner as claimed in Claim 1, which is characterized in that, said base consists of side plates and a base plate, said side plates are two in number and respectively molded at both sides of said base plate; said side plate is divided into two sections in broken line form; the front end of the inclined section of said side plate is equipped with a winding spring pin stopper section for fixing and installing the winding spring pin; the horizontal section of said side plate is equipped with a reel mounting hole for mounting the reel, a retaining plate mounting groove for mounting the retaining plate, and a fixed hook pin mounting hole for mounting the fixed hook pin.

3. An automatic winding ratchet wheel tensioner as claimed in Claim 2, which is characterized in that, said winding spring pin consists of a installation section and a hinge pin; said hinge pin and said installation section are integrated into one piece; said installation section and the side plate winding spring pin stopper section at one side of said base match each other for installation; said hinge pin passes through the winding drum and is connected with the side plate at the other side of said base. Said winding spring is installed on said hinge pin.

4. An automatic winding ratchet wheel tensioner as claimed in Claim 3, which is characterized in that,

Claims

said handle consists of the handle body, said handle body are drilled with a reel mounting hole, one cam for pushing the retaining plate is equipped under said reel mounting hole; a plate torsional spring connecting section is equipped in the middle of said handle body; and one handle seat connection section for connecting the handle seat is equipped at the rear end of said handle body.

5. An automatic winding ratchet wheel tensioner as claimed in Claim 4, which is characterized in that, said retaining plate consists of the retaining plate body; stopper sections for stopping the ratchet wheel are equipped at both sides of said retaining plate body; the surface of said retaining plate body has a semicircular protrusion; said protrusion is installed with a retaining torsional spring; and one end of said retaining torsional spring is connected with said side plate.

6. An automatic winding ratchet wheel tensioner as claimed in Claim 5, which is characterized in that, said handle plate consists of the handle plate body; the front end of said handle plate body has a toggle section; the connection between said toggle section and said handle plate body has an arc-shaped supporting section; and the rear end of said handle plate body has a pushing section.

7. An automatic winding ratchet wheel tensioner as claimed in Claim 6, which is characterized in that, said ratchet wheel consists of the ratchet wheel body, and said ratchet wheel body has two reel holes for matching said reel.

8. An automatic winding ratchet wheel tensioner as claimed in any one of claims 1 to 7, which is characterized in that, both ends of said reel are equipped with end caps for matching two said reels.

9. An automatic winding ratchet wheel tensioner as claimed Claim 8, which is characterized in that, said base has a protection cover under it.

10. An automatic winding ratchet wheel tensioner as claimed Claim 9, which is characterized in that, said winding drum and said reel are arranged in parallel.

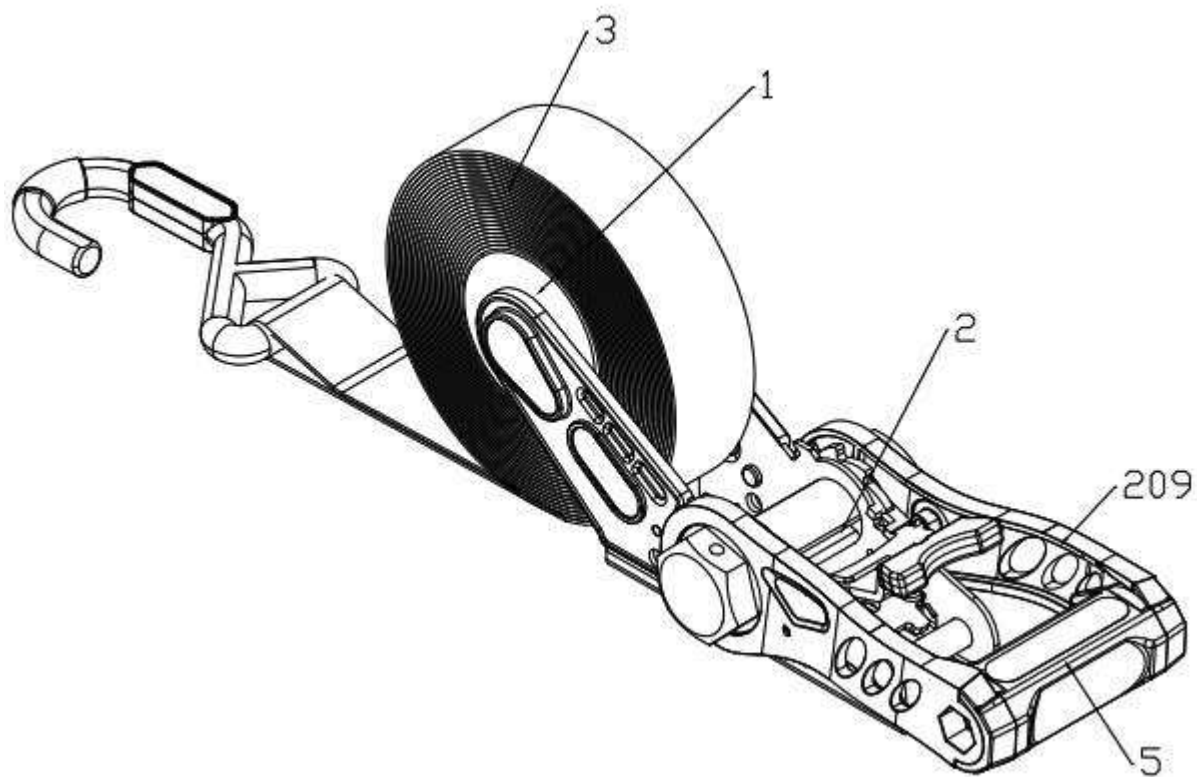


Figure 1

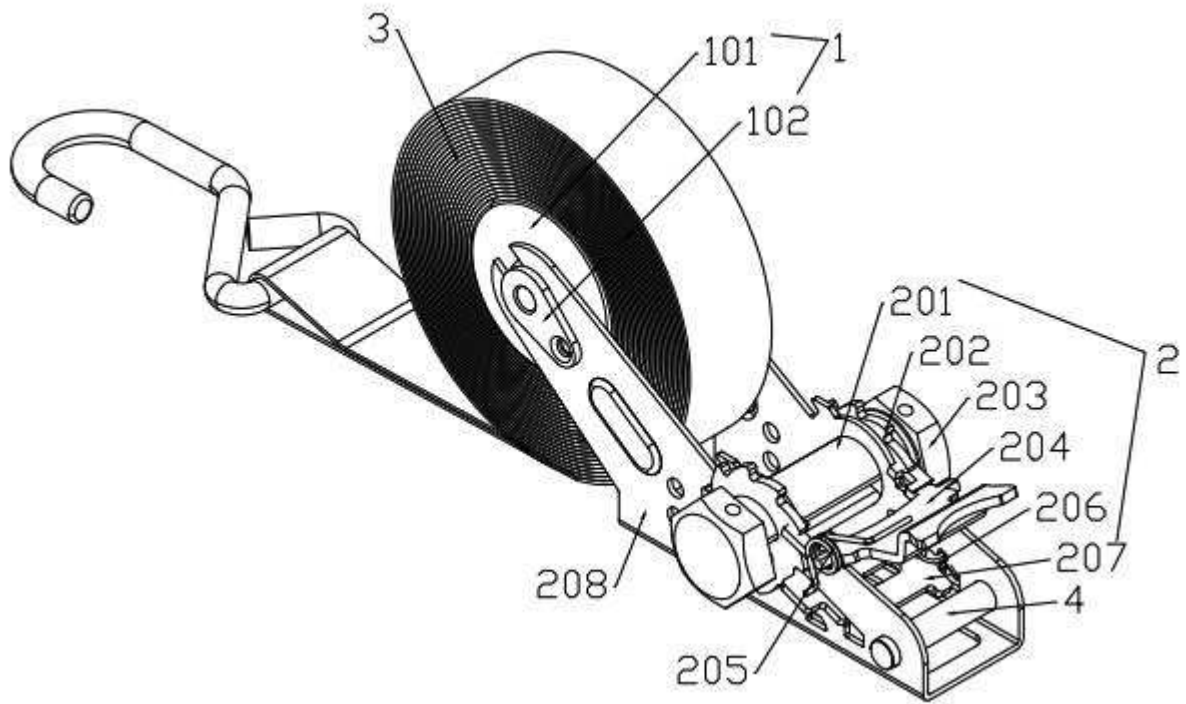


Figure 2

Drawings

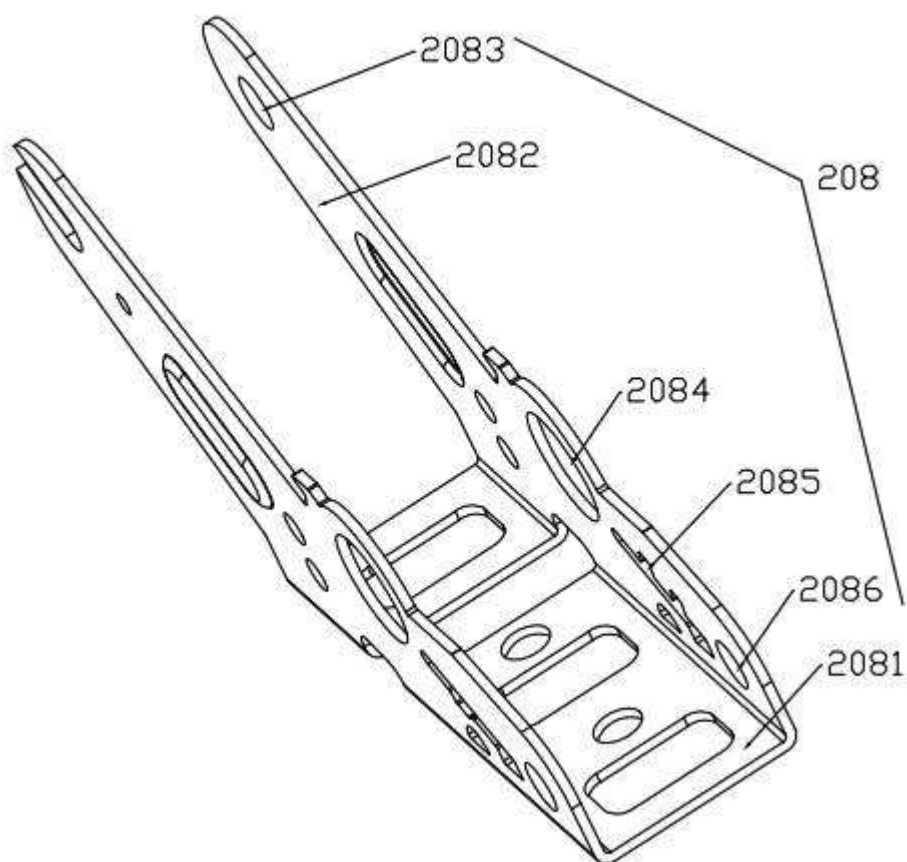


Figure 3

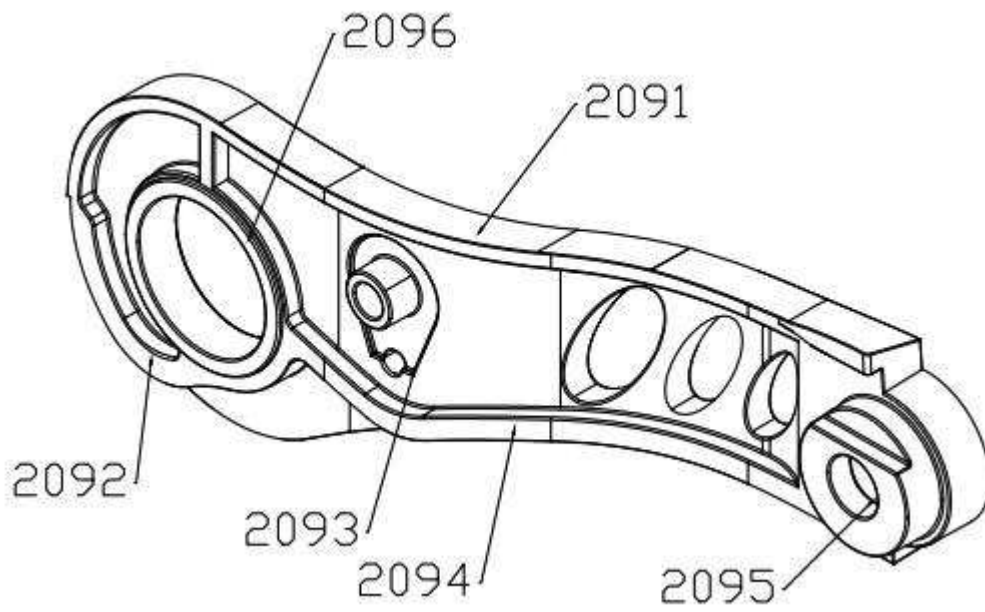


Figure 4

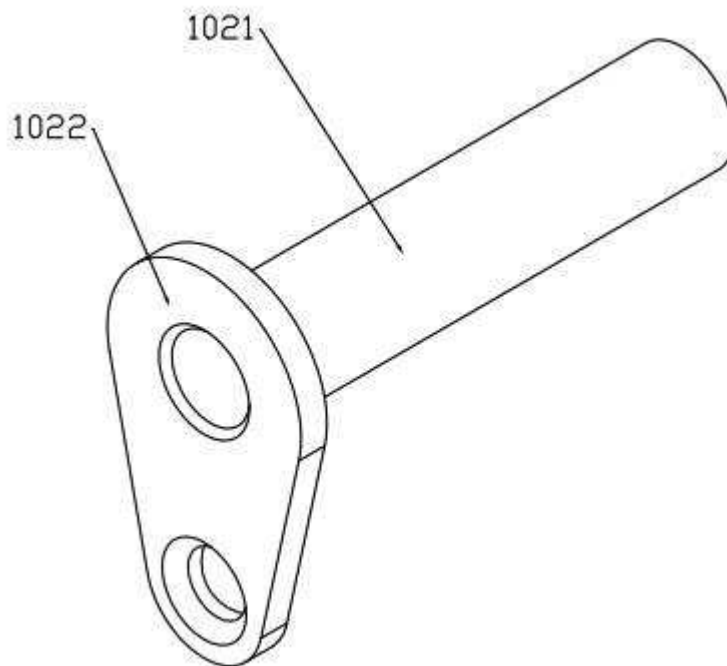


Figure 5

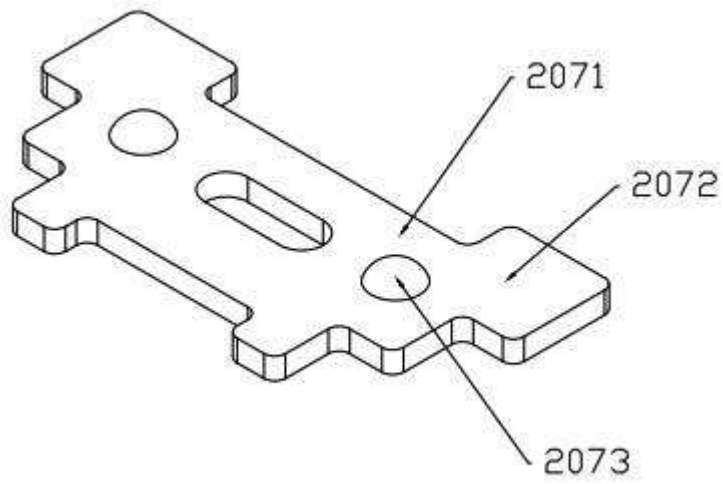


Figure 6

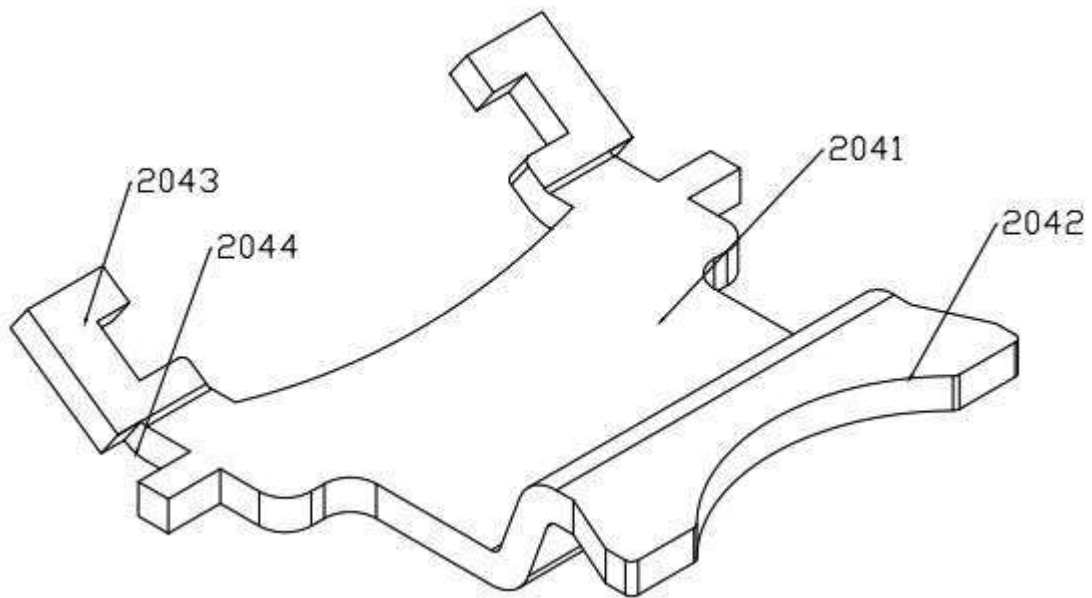


Figure 7

Drawings

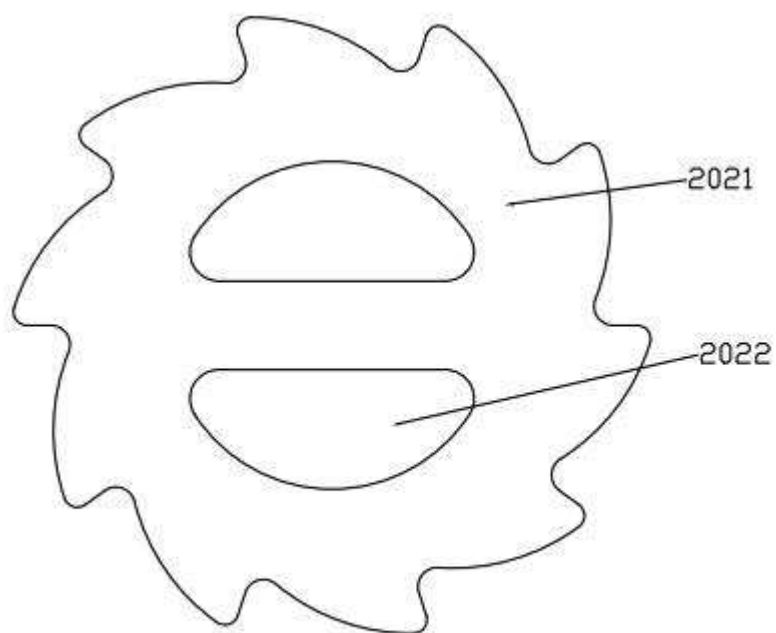


Figure 8