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Strap-cutting mechanism for strapping device

Abstract

A strap-cutting mechanism for a strapping device includes a strap-cutting head that has a through hole and clamping members. The through hole receives a knife sleeve extending therethrough. The clamping members are separated so that plates and a spacer arranged therebetween. The spacer is arranged between the plates so that a gap is formed between the plates for a packing strap to pass therethrough. The gap guides the packing strap so that a smooth strapping process can be ensured. An alternative spacer of a different thickness may be used to adjust the gap formed between the plates. This allows the plates and/or the spacer when become damaged or deformed after long use to be easily replaced, thereby extending the service life of the strapping device.

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Background/Summary

BACKGROUND OF THE INVENTION

1. Technical Field
- (1) The present invention relates to a strap-cutting mechanism, and more particularly to a strap-cutting mechanism for a strapping device.
2. Description of Related Art

(2) To pack a package with a packing strap for transportation, the conventional practice is to put the packing strap around the package and then use a manual strapping device or a power strapping device to tighten and seal the packing strap. Such a strapping device typically comprises a main body, which holds a strap-cutting component and a take-up component. The strap-cutting component comprises a knife sleeve and a knife shaft. The knife sleeve is formed with a pair of strap-holding slits for a packing strap to pass therethrough. The knife shaft is received in the knife sleeve. The knife shaft has one end equipped with a handle. In use, after the packing strap with a metal seal is put around an object, the packing strap is drawn to pass the knife sleeve and then tensioned by take-up component. At last, the user can operate the handle to rotate the knife shaft to thereby cut the packing strap, thereby finishing the strapping process.

(3) After repeated use, the strapping device tends to see damage and/or deformation at its knife sleeve, strap-holding slits, and knife shaft. It is thus desired to have components of a strapping device designed as separate parts that are easy to repair and/or replace. Hence, the inventor of the present invention has devised the subject matter of the present invention to improve the foregoing and other existing strapping devices.

SUMMARY OF THE INVENTION

(4) The primary objective of the present invention is to provide a strap-cutting mechanism for a strapping device that is easy to adjust, maintain, and repair.

(5) In order to achieve the foregoing objective, the present invention provides a strap-cutting mechanism for a strapping device that has a main body comprising a strap-cutting mechanism and a take-up component, wherein the strap-cutting mechanism comprises: a strap-cutting head, having a through hole and a pair of clamping members, the strap-cutting head being attached to the main body, the through hole receiving a knife sleeve extending therethrough, the knife sleeve having an extension that juts out of the strap-cutting head, the extension being formed with a pair of strap-holding slits, the clamping members being separated so that a pair of plates and a spacer are arranged therebetween, the plates each having an extension that juts out of the strap-cutting head, and the spacer being arranged between the plates so that a gap that is communicated with the strap-holding slits is formed between the extensions of the plates.

(6) In the present invention, with the gap formed between the plates in virtue of the spacer, a smooth strapping process can be ensured. Additionally, an alternative spacer of a different thickness may be used to adjust the gap formed between the plates. This design also allows the plates and/or the spacer that get damaged or deformed after long use of the strapping device to be easily replaced, thereby extending the service life of the strapping device.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

(1) FIG. 1 is a perspective view of a preferred embodiment of the present invention.

(2) FIG. 2 is an exploded view of the preferred embodiment of the present invention.

(3) FIG. 3 is an applied view of the preferred embodiment of the present invention, wherein the device is taking up a packing strap.

(4) FIG. 4 is another applied view of the preferred embodiment of the present invention, wherein the device is cutting the packing strap.

(5) FIG. 5 is another applied view of the preferred embodiment of the present invention, wherein the device is tearing the packing strap.

DETAILED DESCRIPTION OF THE INVENTION

(6) FIG. 1 and FIG. 2 are a perspective view and an exploded view of a preferred embodiment of the present invention, respectively. As shown, a strap-cutting mechanism is applied to a strapping device **100**, which is herein a hand-held power strapping device and has a main body **10** in addition

to the strap-cutting mechanism **20**.

(7) The main body **10** is partially hollow to define therein a first accommodating space **11**. The main body **10** has a grip **12** and a power section **13**. The grip **12** is provided with a button **14**. The power section **13** is configured to hold a power source **15**, which is herein a battery. The button **14** and the power source **15** are electrically connected to each other.

(8) The strap-cutting mechanism **20** comprises a strap-cutting head **21**. The strap-cutting head **21** defines therein a second accommodating space **22**, is formed with a through hole **23**, and has a pair of clamping members **24**. The strap-cutting head **21** is attached to the main body **10**, so that the first accommodating space **11** and the second accommodating space **22** are communicated with each other. The through hole **23** is for receiving a knife sleeve **25** that extends therethrough. The knife sleeve **25** is formed with a positioning recess **251**. The knife sleeve **25** has an extension **252** jutting out of the strap-cutting head **21**. The extension **252** is formed with a pair of strap-holding slits **253**. The strap-holding slits **253** are configured for a packing strap **200** to pass therethrough. The knife sleeve **25** may receive a knife shaft **26** or not. The knife shaft **26** has a fixed end, which is radically fixedly connected to a handle **27**. The handle **27** when being operated drives the knife shaft **26** to rotate, thereby cutting the packing strap **200**. The clamping members **24** have their respective inner sides that face each other jointly defining a mouth **241** therebetween. The mouth **241** and the through hole **23** are communicated with each other. The clamping members **24** are connected together by a plurality of screws, and have a pair of plates **28** and a spacer **29** arranged therebetween. The plates **28** may be blades. The plates **28** each have an extension **281** jutting out of the strap-cutting head **21**. Each of the extensions **281** has a part positioned in one of the strap-holding slits **253**. The spacer **29** is located between the plates **28**. A gap **282** is formed between the extensions **281** of the plates **28** and communicated with the strap-holding slits **253**, so that the packing strap **200** can pass through the gap **282**, as shown in FIG. 3. The plates **28** and the spacer **29** each have a positioning salient **283** or **291**. The positioning salients **283**, **291** are positioned in the positioning recess **251**.

(9) The strapping device **100** further has a take-up component **30**, which comprises a motor **31**, a reduction gear set **32** or a planetary gear set, a worm **33**, and a take-up roller **34**. The motor **31** is electrically connected to the button **14** and the power source **15**. The motor **31**, the reduction gear set **32**, and the worm **33** are connected to each other. The motor **31** and the reduction gear set **32** are installed in the first accommodating space **11**, and the take-up roller **34** is installed in the second accommodating space **22**. A worm gear **35** mounted around the take-up roller **34** is engaged with the worm **33**. Therein, the take-up roller **34** has an extension **341** jutting out of the strap-cutting head **21**. The extension **341** of the take-up roller **34** is formed with a strap-holding slits **342** for the packing strap **200** to pass therethrough. Thereby, when the button **14** is pressed, the motor **31** drives the reduction gear set **32**, the worm **33**, the worm gear **35**, and the take-up roller **34** to make the take-up roller **34** rotate and tension the packing strap **200**.

(10) Referring to FIG. 3, in use of the strapping device **100**, a packing strap **200**, which is a metal strap with a metal seal, is put around an object **201**, so that the plates **28** press against the metal seal. Then the packing strap **200** is drawn to pass between the plates **28**, and pass the strap-holding slits **253** of the knife sleeve **25** and the strap-holding slits **342** of the take-up roller **34**, successively. Afterward, the button **14** is pressed to make the take-up roller **34** take the strap up, thereby tensioning the packing strap **200**. At last, the handle **27** is operated to drive the knife shaft **26** to rotate and cut the packing strap **200**, so as to finishing the strapping operation, as shown in FIG. 4.

(11) In the present invention, with the gap **282** formed between the plates **28** in virtue of the spacer **29** for the packing strap **200** to pass therethrough, the packing strap **200** is well guided and the risk of curl or twist can be eliminated, thereby ensuring a smooth strapping process. Additionally, since the plates **28** and the spacer **29** are fixed to the strap-cutting head **21** through the screws, an alternative spacer **29** of a different thickness may be used to adjust the gap **282** formed between the plates **28**. This design also allows the plates **28** and/or the spacer **29** that get damaged or deformed

after long use of the strapping device **100** to be easily replaced, thereby extending the service life of the strapping device **100**.

(12) Referring to FIG. 5, the present invention may be implemented without the knife shaft in the knife sleeve **25**. In this case, after the packing strap **200** is put around an object and tensioned in the way described previously, the strapping device **100** can be torn against the plates **28**, so that the plates **28** help break the packing strap **200**, thereby finishing the strapping process.

Claims

1. A strap-cutting mechanism for a strapping device that has a main body comprising a strap-cutting mechanism and a take-up component, wherein the strap-cutting mechanism comprises: a strap-cutting head, having a through hole and a pair of clamping members, the strap-cutting head being attached to the main body, the through hole receiving a knife sleeve extending therethrough, the knife sleeve having an extension that juts out of the strap-cutting head, the extension being formed with a pair of strap-holding slits, the clamping members being separated so that a pair of plates and a spacer are arranged therebetween, the plates each having an extension that juts out of the strap-cutting head, and the spacer being arranged between the plates so that a gap that is communicated with the strap-holding slits is formed between the extensions of the plates.
 2. The strap-cutting mechanism of claim 1, wherein the knife sleeve is formed with a positioning recess, while the plates and the spacer each have a positioning salient, so that the positioning salient of the plates and the positioning salient of the spacer are positioned in the positioning recess.
 3. The strap-cutting mechanism of claim 1, wherein the knife sleeve receives a knife shaft, and a handle is fixedly connected to one end of the knife shaft, so that when the handle is operated, the handle drives the knife shaft to rotate.
 4. The strap-cutting mechanism of claim 1, wherein the plates are blades.
 5. The strap-cutting mechanism of claim 1, wherein the clamping members have respective inner sides thereof that face each other jointly defining a mouth therebetween, and the mouth and the through hole are communicated with each other.
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