Adjustable Duty Belt Configured With Detachably Joined Segments

Related Application

[001] The present invention claims priority to Singapore patent application no. 10202104800V filed on 7 May 2021, the disclosure of which is incorporated in its entirety.

Field of Invention

[002] The present invention relates to adjustable duty belts configured in 2 segments, which belt segments are detachably joined to allow the length to be pre-adjusted to accommodate desired waist sizes. Paddings are secured on each adjustable duty belt to provide comfortable donning on a user and to increase load attachments.

Background

[003] Duty belts used around the waist allow pouches or holders to be attached for carrying tools, batteries, portable equipment, etc. A conventional duty belt is usually made of a single piece, often rigid or semi-rigid, and is fixed in length; the ends terminate with components of a quick-release buckle, with an end being folded back to give a limited amount of adjustment. The rigidity of the duty belt also decreases movements of the user. This conventional duty belt may be slotted through a hip-belt cover, which is often equipped with compartments for soft ballistics when used by soldiers. The hip-belt cover is often used to provide a larger area for pouch or holder attachment.

[004] Often, backpacks are used to carry heavy loads; usually, these backpacks come with their own cushioned hip belts; these cushioned hip belts are not provided with Molle slots for attaching pouches or tools or connecting to other backpacks. Whilst some duty belts do provide Molle slots, these duty belts are not compatible with the cushioned hip belts that come with the associated backpacks, often requiring the user to choose either of the two; in instances where users have to use both duty belt and cushioned hip belt due to mission requirements, this results in a bulky configuration, poor ergonomics or inefficient load distribution.

[005] From the above, it can be seen that there is a need to provide an adjustable duty belt which length can be pre-adjusted or pre-determined to accommodate various waist sizes.

Desirably, the adjustable duty belt is sturdy, easy to wear or remove, and when worn can be quickly tightened to conform comfortably around the hip of the user. Desirably, the duty belt is compatible for use with a backpack.

Summary

[006] The following presents a simplified summary to provide a basic understanding of the present invention. This summary is not an extensive overview of the present invention, and is not intended to identify key features of the invention. Rather, it is to present some of the inventive concepts of this invention in a generalised form as a prelude to the detailed description that is to follow.

[007] The present invention seeks to provide an adjustable duty belt, for eg. for an uniformed personnel, including a soldier, or for a workman. The adjustable duty belt may be worn by itself or with a hip belt which provides for additional load carriage capabilities, ballistic protection coverage and/or comfort. Without the hip belt, pouches or holders can still be attachable onto the adjustable duty belt. It is also desirable to connect a backpack or field equipment to the adjustable duty belt.

[008] In one embodiment, the present invention provides an adjustable duty belt comprising: a left-hand belt segment and a right-hand belt segment, wherein rear ends of the left- and right-hand belt segments are joined by an overlapping joint that is held together by disconnectable fasteners to provide an adjustable duty belt with a predetermined length to suit a desired waist size of a user, and; wherein the disconnectable fasteners comprise Velcro hook-and-loop components; Molle straps weaved with a webbing tab; snap fasteners; or magnets; or any combinations thereof.

[009] Preferably, when the Molle straps are located on the rear ends of the left- and right-hand belt segments at a regular spacing, so that when the mating surfaces of the overlapping joint are brought together, the webbing tab sewn at either end of the belt segment is weaved alternately between the Molle straps located on the left- and right-hand belt segments to form the overlapping joint.

[0010] Preferably, each of front ends of the left- and right-hand belt segments is looped over an associated component of a quick-release buckle before being looped over a

respective length-adjust buckle, so that the front free ends are forward pointing, and the front end(s) can be tugged in a forward direction to tighten the adjustable duty belt when the adjustable duty belt is donned on. To loosen the adjustable duty belt, for eg., to fine adjust the length, the quick-release buckle is disconnected and the adjustable duty belt over either one or both of the length-adjust buckle is pushed backward.

[0011] Preferably, the adjustable duty belt further comprises a middle attachment member being configured in an open configuration with 3-fold flaps, namely, the inner, lower and outer flaps, that are foldable and attachable over the adjustable duty belt at the overlapping joint by Velcro hook-and-loop components. Preferably, the outer flap is additionally secured over the overlapping joint by a zip fastener.

[0012] Preferably, the adjustable duty belt further comprises a side-attachment member being slotted on each side of the middle-attachment member. When the side-attachment members are made in a closed sleeve configuration with an interior channel and the adjustable duty belt is slotted through the interior channel. Preferably, each of the left- and right-hand belt segment of the duty belt is formed with a relatively hard portion and a soft portion, so that the relatively hard portion provides ease of slotting through the interior channel. It is also possible that the closed sleeve configuration of the side-attachment member is formed by sewing or by a zip fastener.

[0013] Preferably, outer surfaces of the middle- and side-attachment members are provided with Molle slots. The Molle slots on the middle-attachment member are connectable by webbing straps to a backpack or field equipment to evenly transfer or distribute load onto the hip of the user, whilst the Molle slots on the side-attachment members, pouches, carriers or tools can be attached thereto, also with some webbing straps. These pouches or carriers provide additional load-carrying spaces.

[0014] Preferably, an interior of the middle attachment or side-attachment member is provided with a compartment. A soft ballistic material is disposed in the compartment, when the user is a law enforcement personnel; the compartments serve as pockets for tools or work supply, when the user is a workman.

[0015] Preferably, the middle- and side-attachment members further comprise foam cushions to provide comfort and snug fit of the adjustable duty belt on the user’s hip.

[0016] Preferably, the adjustable duty belt further comprises support harnesses to partially transfer a load on the adjustable duty belt onto an upper torso of the user. Advantageously, the support harnesses stabilize the adjustable duty belt on the waist of the user, keep the loads on the adjustable duty belt close to the body of the user and prevent jiggling of the loads, pouches or carriers from wearing down on the user.

Brief Description of the Drawings

[0017] This invention will be described by way of non-limiting embodiments of the present invention, with reference to the accompanying drawings, in which:

[0018] FIGs. 1A-1B illustrate an adjustable duty belt being made up of two belt segments (a left-hand and a right-hand), with markings for small, medium and large waist sizes. FIG. 1C illustrates an assembly of the adjustable duty belt with rear ends of the two belt segments being connected by an overlapping joint, and front ends being connected via a quick-release buckle;

[0019] FIG. 2A illustrates in an exploded view, each belt segment of the adjustable duty belt being slotted through a side-attachment member, together with a middle-attachment member; FIGs. 2B-2C illustrate the middle-attachment member being progressively secured over the overlapping joint of the two belt segments; FIG. 2D illustrates the adjustable duty belt being configured for a small waist size, with FIG. 2E being suited for a larger waist size;

[0020] FIGs. 3A-3B illustrate flaps with Velcro hook-and-loop components for securing the middle-attachment member onto the adjustable duty belt at the overlapping joint, with an inner flap and a lower flap coming together to strengthen the overlapping joint;

[0021] FIG. 4 illustrates a manner of threading each free end of the adjustable duty belt through a quick-release buckle and a triglide (length-adjust) buckle to allow tightening of the adjustable duty belt with a forward tug when donned around a waist of the user;

[0022] FIGs. 5A-5B illustrate two views of the adjustable duty belt complete with 2 side-attachment members and a middle-attachment member;

[0023] FIG. 6 illustrates a use of the adjustable duty belt with support harnesses;

[0024] FIG. 7 illustrates connection between the adjustable duty belt, the middle-attachment member and a backpack; and

[0025] FIGs. 8A-8B illustrate an adjustable duty belt being equipped with Molle straps, which are weaved with a webbing tab sewn at one end of the belt segment to form another type of overlapping joint between the belt segments.

Detailed Description

[0026] One or more specific and alternative embodiments of the present invention will now be described with reference to the attached drawings. It shall be apparent to one skilled in the art, however, that this invention may be practised without such specific details. Some of the details may not be described at length so as not to obscure the present invention. For ease of reference, common reference numerals or series of numerals will be used throughout the figures when referring to the same or similar features common to the figures.

[0027] FIGs. 1A-1C show an adjustable duty belt **100** according to an embodiment of the present invention. The adjustable duty belt **100** may be used by a law enforcement personnel or a workman. The adjustable duty belt **100** is made of a webbing material formed with fibres of nylon, PP, PE, PET, etc. or mixtures thereof and are suitable for use as belts, with widths ranging from substantially 3 – 6 cm. As shown, the adjustable duty belt **100** is made up of a left-hand belt segment **100L** and a right-hand belt segment **100R**, with the front ends (with respect to the user) terminating with a pair of male/female cooperating quick-release buckle **110**,**110m**,**110f** and the two opposite, rear ends are connected by overlapping one another to form an overlapping joint **100J**. FIG. 1C shows the adjustable duty belt **100** being formed in an endless loop.

[0028] Preferably, the adjustable duty belt **100** is formed with two webbing material layers that are sewn together, so that an intermediate portion of each belt segment **100L**,**100R** is provided with a relatively hard yet flexible insert to form a relatively hard portion **H**, whilst the free end portion remains soft **S**, as shown in FIGs. 1A-1B. The relatively hard portions H help to maintain shape integrity or stability and to ensure sufficient structural support for the adjustable duty belt **100**,**100L**,**100R**, while keeping the adjustable duty belt **100** flexible when donned around the waist of a user. The adjustable duty belt **100** does not impede or hinder movements or create discomfort to the user; such user movements are not limited to crawling, jumping, running, etc. The mating surfaces of the soft **S** portions are provided with Velcro **V** hook-and-loop components, so that when the soft **S** portions are brought together, the Velcro **V** components assist in forming the overlapping joint **100J**. To assist a user to decide on a suitable predetermined length of the adjustable duty belt **100** to make, markings **SW**,**MW**,**LW** to indicate small waist, medium waist or large waist sizes, respectively, are provided on one of the belt segment **100L**,**100R**. Fine adjustments of the adjustable duty belt **100** length is also provided and this will become clearer after describing FIG. 4.

[0029] In another embodiment, the left-hand and right-hand belt segments **100L**,**100R** can be configured entirely soft or hard, depending on the webbing material used.

[0030] Referring back to FIGs. 1A-1C, a length-adjust (or triglide) buckle **112** is provided near the quick-release buckle **110**,**110m**,**110f**. One part of the length-adjust buckle **112** is sewn (such as, with a webbing) to the associated belt segment **100L**,**100R** and the free ends of the belt segments are looped at the quick-release buckle **110m**,**110f**, turned back and slotted through the associated length-adjust buckle **112**, so that the free ends of the belt segment are pointing in a forward direction (as shown in FIG. 4). Each of the free end of the belt segments **100L**,**100R** can be tucked or folded neatly into an elastic keeper **114**.

[0031] FIG. 2A shows the belt segments **100L**,**100R** are slotted through a respective side-attachment member **140**, together with a middle-attachment member **120**. FIGs. 2B-2C show the belt segments **100L**,**100R** being brought together to form the overlapping joint **100J** and the middle-attachment member **120** being progressively folded and attached over the overlapping joint **100J**. In one embodiment, the side-attachment member **140** is made in a closed configuration resembling a flat sleeve with an interior channel through which

the adjustable duty belt **100**,**100L**,**100R** is slotted through; the interior channel is equipped with a Velcro **V** hook-and-loop fastener component. To slot a belt segment of the adjustable duty belt **100L**,**100R** through the side-attachment member **140**, the relatively soft portion **S** is folded over the relatively hard portion **H** before it is slotted through the side-attachment member **140**, with the relatively hard portion **H** making it easier to overcome resistance caused by contact of Velcro **V** hook-and-loop components disposed on the adjustable duty belt **100**,**100L**,**100R** and the interior surfaces of the side-attachment members **140**. A webbing tab **100T** provided at one end of the adjustable belt segment **100L**,**100R** is useful and can be used to help a user slot the belt segment through the side-attachment member **140**. As will be seen in FIGs. 8A-8B, the webbing tab **100T** serves another purpose in another embodiment of the overlapping joint.

[0032] As shown in FIGs. 2B-2C, two side-attachment members **140** and the middle attachment member **120** are attached removeably onto the adjustable duty belt **100**. These attachment members have MOLLE compatible slots **150** formed on the outside surfaces of the side-attachment and middle-attachment members for attaching pouches or carriers that provide spaces for carrying portable equipment, tools, battery, etc. Internally in the attachment members **120**,**140**, foams are provided to give user's comfort, in addition to providing a snug fit around the user's waist when donned on.

[0033] FIGs. 2D-2E show two assemblies of the adjustable duty belt **100** with the side- and middle-attachment members **120**,**140** with the adjustable duty belt **100** formed with predetermined lengths. For illustration, FIG. 2D shows the adjustable duty belt **100** is configured for a small waist (SW) size, whilst FIG. 2E shows the adjustable duty belt **100** is configured for a large waist (LW) size. When used by soldiers or law enforcement personnel, the side- and middle-attachment members **120**,**140** are usually equipped with soft ballistics to provide ballistic protection around the waist. When an adjustable duty belt **100** is long and there are spaces in between the side- and middle-attachment members **120**,**140**, additional attachment members (not shown in the figures) being equipped with soft ballistics may be inserted in these spaces to provide complete ballistic protection around the waist and/or provide extra load carriage capability. These soft ballistics may be scalable to include other types of ballistics according to mission requirements without compromising on the form factor, shape or dimensions of the side- and middle-attachment members **120**,**140**. Preferably, edges of these soft ballistics, and any other inserts, are

radiused so that when these soft ballistics or inserts are located in pockets inside the side- and/or middle-attachment members **120**,**140**, there are no sharp edges or points to create abrasion on the user. The soft ballistics or inserts can be accessed through a zip located at a mouth of the respective pocket or can be permanently secured inside the attachment members **120**,**140** during fabrication.

[0034] When the adjustable duty belt **100** is used by a workman, the soft ballistics are not required; the pockets inside the side- and middle-attachment members **120**,**140** are used to hold tools or workman supplies.

[0035] FIGs. 3A-3B show the middle-attachment member **120** according to one embodiment. The middle-attachment member **120** is made up of open-flaps configuration, as compared to the closed configuration of the side-attachment member **140**. As shown, the middle-attachment member **120** has an inner flap **122**, a lower flap **124** and an upper flap **126**. The inner flap **122** and the lower flap **124** are spaced apart to form a channel into which the overlapping joint **100J** is located (as seen in FIG. 2B). FIG. 3B shows the inner flap **122** is foldable (over the overlapping joint **100J**), the lower flap **124** is then foldable over the inner flap **122**, and the upper flap **126**, in turn, is foldable over the lower flap **124**. The mating interfaces of the inner flap **122**, lower flap **124** and upper flap **126** are sewn with Velcro **V** hook-and-loop components to form strong and secure 3-fold removeable connection of the middle-attachment **120** onto the adjustable duty belt **100**. In this way, a sturdy adjustable duty belt **100** with a predetermined length before joining is provided. The middle-attachment member **120** being wrapped around the overlapping joint **100J** is very strong, for eg., enough to withstand the rigour of military usage or as a safety belt for a workman, yet the overlapping joint **100J** is disconnectable according to a need.

[0036] In another embodiment, the upper flap **126** can be additionally closed or secured by a zip fastener. It is possible that in yet another embodiment, the side-attachment members **140** are sewn onto the adjustable duty belt **100**,**100L**,**100R**.

[0037] FIG. 4 shows part of the adjustable duty belt **100** at the front side (with respect to the user), which front ends are connected via the quick-release buckle **110**,**100m**,**100f**. As described above, the free ends of the belt segments **100L**,**100R** are looped at the associated quick-release buckle **110m**,**110f**, turned back and slotted through the associated length-adjust buckles **112**, so that the free ends of the belt segments are pointing in a forward

direction. After donning on, a user can pull in a forward direction (as shown by the arrows **P** in FIG. 4) on the front ends of the belt segments for tightening of the adjustable duty belt **100**, and it stays tightened even during dynamic user motions. During use, the front ends of the adjustable duty belt **100** (on each lateral side) can be tucked or folded neatly into an associated elastic keeper **114** to prevent the ends from dangling out. To loosen the adjustable duty belt **100**, for eg., to fine adjust the length, the quick-release buckle **110** is disconnected and the adjustable duty belt **100** over either one or both of the length-adjust buckle **112** is pushed backward.

[0038] FIGs. 5A-5B show two views of the adjustable duty belt **100** complete with the side- and middle-attachment members **120**,**140**, which are useful for a law enforcement personnel or workman.

[0039] FIG. 6 shows a use of the adjustable duty belt **100** complete with support harnesses **170**. The support harnesses **170** assist the user by spreading the load partially onto the upper torso, specifically areas around the shoulders and the back. In addition, the support harnesses **170** help to stabilize the adjustable duty belt **100** around the user's waist to ensure a snug fit, so that the adjustable duty belt **100** does not shift substantially around the user's waist during user movements; weight distribution, for eg. from a backpack **180**, remains consistent and the centre of gravity of load of the backpack **180** is kept close to the body; in effect, the support harnesses **170** enhance user endurance by reducing constant jiggling of the backpack **180** or swinging of attached pouches that weighs down on the user. When the adjustable duty belt **100** is loosened, for eg. for fine adjustment of the length, the support harnesses **170** become useful.

[0040] FIG. 7 shows a use of the adjustable duty belt **100** being configured to be compatible with the backpack **180** according to another embodiment. For eg., to connect the middle-attachment member **120** to the backpack **180**, Velcro **V** hook-and-loop components are provided on the outer surface of the middle-attachment member **120** and a rear, lower surface of the backpack **180**. In another embodiment, it is also possible to provide webbing straps **160** to connect the backpack **180** to the outer surface of the middle-attachment member **120** via the Molle slots **150**. In another embodiment, a field equipment (not shown in the figures) is connectable to the middle-attachment member **120**. In these manners, a user will still be able to carry mission essentials on the side-attachment

members **140** whilst allowing load from the backpack **180** or field equipment to be distributed efficiently to the hip. In other embodiments, the adjustable duty belt **100** is threaded through the middle-attachment member **120** and is secured through various fastening mechanisms not limited to Velcro V, snap fasteners or Molle straps weave, to allow the compatibility with the side-attachment members **140** where pouches and equipment can be attached thereon.

[0041] In the above illustrations, the two belt segments **100L**,**100R** are connected at the overlapping joint **100J** by means of Velcro **V** hook-and-loop components. Now, in another embodiment, FIGs. 8A-8B show an adjustable overlapping joint **100**K of the two belt segments **100aL**,**100aR** using Molle straps **152** sewn at a regular spacing along the mating surfaces of the two belt segments and weaving the webbing tab **100T** through the Molle straps **152**. As shown in FIGs 8A-8B, the Molle straps **152** are sewn near the rear ends of both the belt segments **100aL**,**100aR**; when the belt segments are brought together the Molle straps **152** are in an alternating manner. The webbing tab **100T** is sewn onto one belt segment, so that after the webbing tab **100T** is weaved through the Molle slots **152** located alternatingly on the belt segments **100aL**,**100aR**, the overlapping joint **100K** is held together by the Molle straps **152** and the webbing tab **100T**. The lengths of the belt segments **100aL**,**100aR** to overlap are also guided by markings **SW**,**MW**,**LW** (as in the earlier embodiment but not shown in FIGs. 8A-8B) to form the overlapping joint **100K** and to produce a predetermined length of the adjustable duty belt, now labelled embodiment **100a**.

[0042] While specific embodiments have been described and illustrated, it is understood that many changes, modifications, variations and combinations of variations disclosed in the text description and drawings thereof could be made to the present invention without departing from the scope of the present invention. For example, when the adjustable duty belt **100**,**100a** is to be used by a workman, the soft ballistics may not be required and the inside spaces may be used as pockets for keeping tools, work parts or work supplies; additional pouches or carriers can be attached on the middle- or side-attachment members **120**,**140** by using the Molle slots **150**, Molle straps **152** with additional straps or webbings. It is also possible that the overlapping joints **100J**,**100K** of the left-hand and right-hand belt segments can be disconnectedly or detachably joined by snap fasteners or magnets, or combinations of the above dis-connectable mechanisms.

CLAIMS:

1. An adjustable duty belt configured to suit a waist size of a user, comprising:

a left-hand belt segment and a right-hand belt segment, wherein rear ends of the left- and right-hand belt segments are joined by an overlapping joint that is held together by disconnectable fasteners to provide an adjustable duty belt with a predetermined length to suit a desired waist size of a user; and

wherein the disconnectable fasteners comprise Velcro hook-and-loop components; Molle straps weaved with a webbing tab; snap fasteners; or magnets; or any combinations thereof.

2. The adjustable duty belt according to claim 1, wherein the Molle straps are located on the rear ends of the left- and right-hand belt segments with a regular spacing, so that when the mating surfaces of the overlapping joint are brought together, the webbing tab sewn at either end of the belt segment is weaved alternately between the Molle straps located on the left- and right-hand belt segments to form the overlapping joint.

3. The adjustable duty belt according to claim 1 or 2, wherein each of front ends of the left- and right-hand belt segments is looped over an associated component of a quick-release buckle before being looped over a respective length-adjust buckle, so that the front free ends are forward pointing, and the front end(s) can be tugged in a forward direction to tighten the adjustable duty belt when the adjustable duty belt is donned on.

4. The adjustable duty belt according to any one of claims 1-3, further comprising a middle attachment member being configured with 3-fold flaps, namely, the inner, lower and outer flaps, that are foldable and attachable over the adjustable duty belt at the overlapping joint by Velcro hook-and-loop components.

5. The adjustable duty belt according to claim 4, wherein the outer flap is additionally secured over the overlapping joint by a zip fastener.

6. The adjustable duty belt according to claim 4 or 5, wherein an outer surface of the middle-attachment member is provided with Molle slots, which are connectable by webbing straps to a backpack or field equipment to evenly transfer or distribute load onto the hip of the user.

7. The adjustable duty belt according to any one of claims 4-6, further comprising a side-attachment member being slotted on each side of the middle-attachment member.

8. The adjustable duty belt according to claim 7, wherein an outer surface of the side-attachment member is provided with Molle slots, which are connectable by webbing straps to attach pouches or carriers that provide additional load-carrying spaces, or to attach tools.

9. The adjustable duty belt according to claim 7 or 8, wherein, when the side-attachment members are made in a closed sleeve configuration with an interior channel and the adjustable duty belt is to be slotted through the interior channel, each of the left- and right-hand belt segment of the duty belt is formed with a relatively hard portion and a soft portion, so that the relatively hard portion allows ease of slotting through the interior channel.

10. The adjustable duty belt according to claim 9, wherein the closed sleeve configuration of the side-attachment member is formed by sewing or by a zip fastener.

11. The adjustable duty belt according to any of claims 7-10, wherein an interior of the middle attachment or side-attachment member is provided with a compartment, in which is disposed a soft ballistic material, when the user is a law enforcement personnel, or the compartments serve as pockets for tools or work supply, when the user is a workman.

12. The adjustable duty belt according to any one of claims 7-11, wherein the middle- and side-attachment members further comprise foam cushions to provide comfort and snug fit of the adjustable duty belt on the user’s hip.

13. The adjustable duty belt according to any one of the preceding claims, further comprises support harnesses to partially transfer a load on the adjustable duty belt onto an upper torso of the user.

14. The adjustable duty belt according to claim 13, wherein the support harnesses stabilize the adjustable duty belt on the waist of the user, keep the loads on the adjustable

duty belt close to the body of the user and prevent jiggling of the loads from wearing down on the user.