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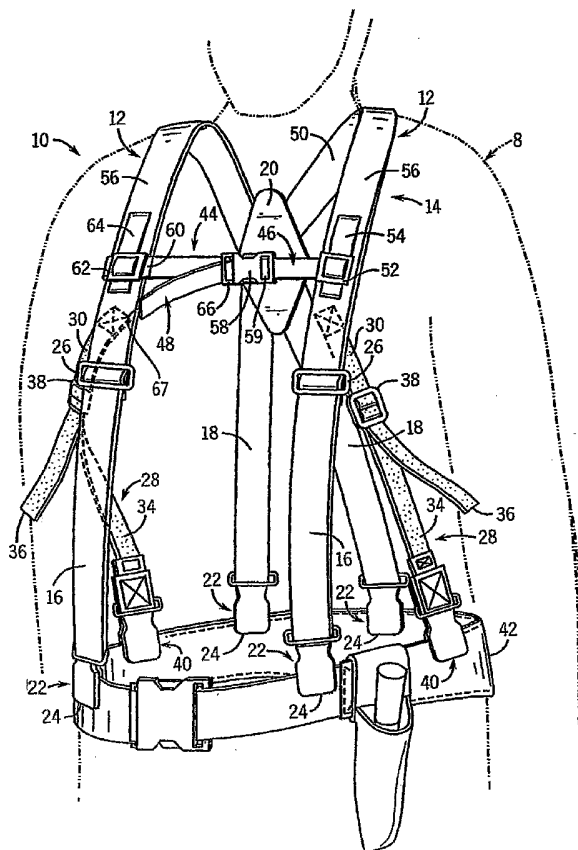
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[Continued on next page]

(54) Title: RELEASABLE SUPPORT STRAP ASSEMBLY



(57) Abstract: A support strap assembly (10) for releasable attachment to a belt (42) or other item for supporting objects worn around the waist area of an individual. The assembly includes a pair of central straps (12) forming a suspender arrangement and a pair of auxiliary straps (28) extending outwardly and connected to the suspender arrangement. When the assembly is secured to the belt (42), depending upon the amount of weight supported by the belt on the individual, the central straps (12) and auxiliary straps (28) can be adjusted in length to adjust the position of the belt with respect to the individual such that the belt is positioned at a more comfortable location on the individual. The assembly can also include a sternum strap (44) connectable across the front of the suspender arrangement to stabilize the position of the assembly on the individual.

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RELEASABLE SUPPORT STRAP ASSEMBLY**CROSS REFERENCE TO RELATED APPLICATIONS**

This application claims priority from U.S. Provisional Patent Application Serial
5 No. 60/468,559, which was filed on May 7, 2003.

FIELD OF THE INVENTION

The present invention relates to supporting mechanisms for items to be carried by an
individual, and more specifically to an adjustable strap assembly that can be releasably connected to
the item in order to enable the item to be moved and be more comfortably positioned on the wearer.

10

BACKGROUND OF THE INVENTION

In order to enable an individual to carry a number of items without utilizing the hands or
arms of the individual, a number of different types of supports have been developed that are worn on
the body of the individual. A large number of these supports are designed as or including a belt that
is secured about the waist of the individual. For example, in order to enable a worker to carry a
15 number of tools and other items, tool belts have been developed which are worn about the waist of
the individual and provide attachment points for a number of different tools as well as pouches for
retaining a number of different items, such as nails and screws. These belts also have some type of
adjustment mechanism, such as a buckle, that enables the length of the belt to be varied to
accommodate the particular individual and hold the belt in the desired spot on the individual.

20

However, due to the overall weight of the items secured to or positioned on the tool belt,
often times the belt does not remain in the position where the individual initially secured it to the
individual's body. The shifting of the tool belt on the individual usually results in the belt being
positioned in an uncomfortable location on the individual, and/or at a location which prevents the
individual from moving in a relatively unhindered manner. This impairs the efficiency of the
25 individual by forcing the individual to constantly readjust the position of the belt on the individual.

25

Therefore, it is desirable to develop an assembly or mechanism which can releasably and
securely retain an item, such as a belt, worn by an individual in a desired location on the individual.
Further, the assembly should be able to adjust the position of the belt on the individual such that if
and when the belt shifts to an undesirable position, the individual can then utilize the assembly to
30 quickly and easily move the belt to a more desirable position.

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SUMMARY OF THE INVENTION

It is an object of the present invention to provide a support strap assembly for an item worn around the waist of an individual that is used to support a number of objects, where the assembly is releasably securable to the item.

5 It is another object of the present invention to provide a support strap assembly that is capable of quickly and easily adjusting the position of the item to which the assembly is secured on an individual wearing both the assembly and the item.

10 It is still another object of the present invention to provide a support strap assembly that has a relatively simple construction formed of a number of straps interconnected with one another and releasably engageable with the item.

The present invention is a support strap assembly comprised of a number of straps interconnected to one another and releasably connectable to an item worn by an individual around the waist of the individual and used to support or hold various objects on the individual, such as a belt, in order to adjustably support the item on the individual. The assembly includes a pair of
15 central straps, formed in a manner similar to a pair of suspenders, that each include releasable attaching means at opposite ends. The attaching means are engageable with the item in order to secure the central straps to the item and allow for any adjustments in the length of the central straps to consequently result in movement of the item on the individual.

20 The support strap assembly also includes a pair of auxiliary straps each secured to one of the central straps at one end. The auxiliary straps are formed similarly to the central straps and each include a releasable attaching means disposed at the end of the auxiliary strap opposite the central strap that is engageable with the item. Generally opposite the attaching means, each auxiliary strap includes a buckle or other adjustment mechanism that enables the length of the auxiliary strap to be adjusted by adjusting the length of the portion of the auxiliary strap which extends from the buckle.
25 By adjusting the length of the auxiliary straps, the position of the item on the individual can be moved by raising or lowering the item with respect to the individual in a manner other than simply adjusting the length of the central straps.

30 Further, the assembly includes a pair of sternum straps that are engaged at one end with each of the central straps and are releasably engageable opposite the central straps with one another. The sternum straps are engageable with one another to prevent the central straps, and the assembly in general, from shifting or sliding outwardly with regard to the body of the individual, depending upon the positioning of the assembly and the item on the individual.

Various other features, advantages and objects of the present invention will be made apparent from the following detailed description taken together with the drawing figures.

BRIEF DESCRIPTION OF THE DRAWINGS

The drawings illustrate the best mode currently contemplated of practicing the present invention.

In the drawings:

Fig. 1 is an isometric front view of the support strap assembly of the present invention;

Fig. 2 is a front plan view of the support strap assembly of Fig. 1; and

Fig. 3 is a rear plan view of the support strap assembly of Fig. 1.

DETAILED DESCRIPTION OF THE INVENTION

With reference now to the drawing figures in which like reference numerals designate like parts throughout the disclosure, a strap assembly constructed according to the present invention is disclosed generally at 10 in Fig. 1 as worn by an individual 8. The assembly 10 is formed with a pair of central straps 12 connected to one another to form a suspender arrangement 14. The straps 12 can be formed of any suitable lightweight and durable material, such as interwoven strands of natural and/or synthetic fibers. The straps 12 can also be formed to incorporate a padding or cushioning material (not shown) within or on one side of the straps 12 to provide additional comfort to the individual 8 wearing the assembly 10. Each central strap 12 includes a front portion 16 and a rear portion 18, with the rear portions 18 joined to one another by a suitable connecting member 20. Alternatively, to provide the same function the central straps 12 can be modified to incorporate the rear portions 18 into a single strap (not shown), or both the front portions 16 and rear portions 18 can be combined into a unitary strap (not shown) including an opening (not shown) through which the individual 8 places their head (not shown) to use the assembly 10.

The connecting member 20 enables the central straps 12 to be secured to one another in a manner which forms the suspender arrangement 14. The connecting member 20 can be attached to each strap 12 in any suitable manner, such as by an adhesive, stitching, or mechanical fasteners, such as rivets, and is formed of a flexible, yet durable material, such as leather. Also, the connecting member 20 can include a pad (not shown) disposed on the connecting member 20 and facing the front portion 16 of each strap 12 that contacts the back of the individual 8 to increase the comfort of the assembly 10 on the individual 8. Alternatively, the connecting member 20 can be omitted and the rear portions 18 of each strap 12 can be connected directly to one another.

Each central strap 12 also includes a pair of securing means 22 disposed at opposite ends of the strap 12 on both the front portion 16 and the rear portion 18. The connecting means 22 can be

any releasable securing means, with an alligator clip 24 being preferred, but any other suitable type of securing means, such as a button, snap, or Velcro connection, among others, are usable as well.

Looking now at Figs. 1–3, to enable the length of each of the central straps 12 to be adjustable, each of the front portions 16 is formed with a loop 25 connected to a buckle 26. The loop 25 has one end secured to the buckle 26 and a second end that is threaded through the buckle 26 to form the remainder of the front portion 16 of the strap 12. The second end of the loop 25 can be moved through the buckle 26 to enable the length of the loop 25 and front portion 16 to be lengthened or shortened as necessary to adjust the overall length of the assembly 10.

The strap assembly 10 also includes a pair of auxiliary straps 28 formed of a material similar to that used for the central straps 12 that are affixed to each of the front portions 16 of each of the central straps 12 in the vicinity of the buckles 26. Each auxiliary strap 28 includes a connecting portion 30 that is affixed to an interior surface 32 of the front portion 16, and an adjustable portion 34 attached to the connecting portion 30. The connecting portions 30 can be secured to the front portions 16 by any suitable means, such as stitching, an adhesive, a mechanical fastener, such as a rivet, among others or any combinations thereof. The adjustable portion 34 includes a free end 36 that is inserted into and engaged with a buckle 38 attached to the connecting portion 30 opposite the central strap 12, and an attaching means 40 attached to the adjustable portion 34 opposite the free end 36. The attaching means 40 is engageable with the item worn by the individual, such as a belt 42 of any of a number of different types, and can be formed similarly to the attaching means 22, in order to releasably affix the auxiliary strap 28 to the belt 42. Also, the connection of the free end 36 of the adjustable portion 34 to the buckle 38 of the connecting portion 30 is preferably made by threading the free end 36 through the buckle 38 to enable the length of the adjustable portion 34 to be lengthened or shortened as necessary. Further, each auxiliary strap 28 can be secured to the adjacent central straps 12 by an adjustable means similar to that used for the sternum strap 44, as will be described.

The assembly 10 also includes a sternum strap 44 including a first section 46 and second section 48 each formed of a material similar to that used to form the central straps 12 that are releasably connected to one another and connected to one of the central straps 12. The first section 46 includes a first end 50 including a first securing structure or member 52. A strip 54 formed of a material similar to that used for the central straps 12 is inserted through the first securing member 52 and secured at its opposite ends using any suitable means, such as by stitching, to an exterior surface 56 of the front portion 16, such as by stitching, in order to slidably affix the first securing structure

member 52 in a manner with respect to the strip 54 and the front portion 16. Opposite the securing structure 52, the first section 46 also includes a buckle 58 at a second end 59.

The second section 48 is formed similarly to the first section 46, including a first end 60 having a second securing member 62 attached thereto. The second securing member 62 is slidably affixed with regard to the front portion 16 of the central strap 12 by a strip 64 inserted through the second securing structure 62 and attached to the exterior surface 56 of the opposite central strap 12 in the manner described previously. Further, the second section 48 includes a buckle-engaging structure 66 that is releasably engageable with the buckle 58 secured to the first section 46. The buckle-engaging structure 66 includes a pair of slots (not shown) through which a second end 67 of the second section 48 can be threaded in order to enable the second section 48 and sternum strap 44 to be adjusted in length as necessary. Alternatively, the first section 46 and the second section 48 can omit both the securing members 52 and 62 and the strips 54 and 64, and can each be attached directly to the interior surface 32 or exterior surface 56 of each front portion 16. Further, instead of using the securing members 52 and 62 to attach the strap sections 46 and 48 to the central straps 12, the strap sections 46 and 48 can have their respective first ends 50 and 60 formed as loops (not shown) positioned around the front portion 16 of each central strap 12 under the strips 54 and 64, respectively.

In use, initially the individual 8 utilizing the assembly 10 secures the belt 42 around the individual's waist. The individual 8 then positions the assembly 10 over the individual's shoulders and attaches each of the securing means 22 and attaching means 40 to the belt 42 at the desired locations in order to secure the assembly 10 to the belt 42. The central straps 12 and auxiliary straps 28 are then each adjusted in length using loops 25, adjustable portions 34 and buckles 26 and 38 in order to enable the assembly 10 to properly support and position the belt 42 on the individual 8. After the belt 42 is properly positioned, the sternum strap 44 is engaged across the chest of the individual 8 to further maintain this alignment.

When the individual 8 places a number of items into or on the belt 42, the weight of the items, and/or movement of the individual 8 will normally cause the position of the belt 42 to shift with respect to the waist of the individual 8. However, due to the engagement of the assembly 10 secured to the belt 42, the initial position of the belt 42 on the individual is maintained in spite of the weight on the belt 42 and the individual's movement. Under certain conditions, however, the magnitude of the weight of the items on the belt 42 and/or very vigorous movement of the individual 8 may shift the position of the belt 42 by loosening the straps 12 and 28 as a result as the weight and/or movement, even though the assembly 10 is connected to the belt 42. In order to reposition

the belt 42 where desired on the individual 8, depending upon the amount of shift of the belt 42, the individual 8 can readjust the length of the central straps 12 and/or the auxiliary straps 28 by shortening the straps 12, 28 to raise the belt 42, or lengthening the straps 12, 28 to lower the belt 42 into a more comfortable position on the individual in the manner described above.

5 Various alternatives are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter regarded as the invention.

CLAIMS

We hereby claim:

1. A support strap assembly for use in maintaining the position of an item around the waist of an individual, the assembly comprising:
 - a) at least one adjustable length central strap including releasable securing means at each end adapted to engage the item; and
 - 5 b) a pair of adjustable length auxiliary straps fixed to the at least one central strap at one end and having releasable attaching means at the opposite end adapted to engage the item.
2. The assembly of claim 1 wherein the at least one central strap includes a front portion including a buckle being adjustable in length and a rear portion connected to the front portion.
3. The assembly of claim 1 wherein the at least one central strap includes a pair of front
10 portions, each front portion having a buckle and being adjustable in length, and a rear portion connected to each of the front portions.
4. The assembly of claim 1 further comprising a pair of central straps, each strap having a front portion with a buckle and being adjustable in length, and a rear portion connected to the front portion, and a connector joining the rear portions of each strap to one another.
- 15 5. The assembly of claim 1 wherein each of the pairs of auxiliary straps includes a first portion secured to the at least one central strap, a second portion carrying the attachment means opposite the first portion, and a buckle secured to the first portion and adjustably engaged with the second portion.
6. The assembly of claim 4 further comprising a sternum strap secured between the pair of
20 central straps and spaced from the pair of auxiliary straps.
7. The assembly of claim 6 wherein the sternum strap includes a first portion slidably secured to one of the pair of central straps and a second portion slidably secured to the other of the pair of central straps and releasably engaged with the first portion.
8. The assembly of claim 7 wherein the first portion and second portion each include a securing
25 member that is slidably secured a strip secured to each of the pair of central straps.

9. The assembly of claim 7 wherein the first portion and second portion each include a looped end that is slidably secured a strip secured to each of the pair of central straps.

10. A method for adjusting the position of an object-holding item on an individual, the method comprising the steps of:

- 5 a) providing a support strap assembly including a pair of central straps secured to one another and having releasable attaching means at each end, and a pair of auxiliary straps secured to the pair of central straps at one end and having releasable securing means opposite the pair of central straps;
- 10 b) connecting the pair of central straps and the pair of auxiliary straps to the item on the individual; and
- c) adjusting the length of the pair of auxiliary straps to position the item on the individual.

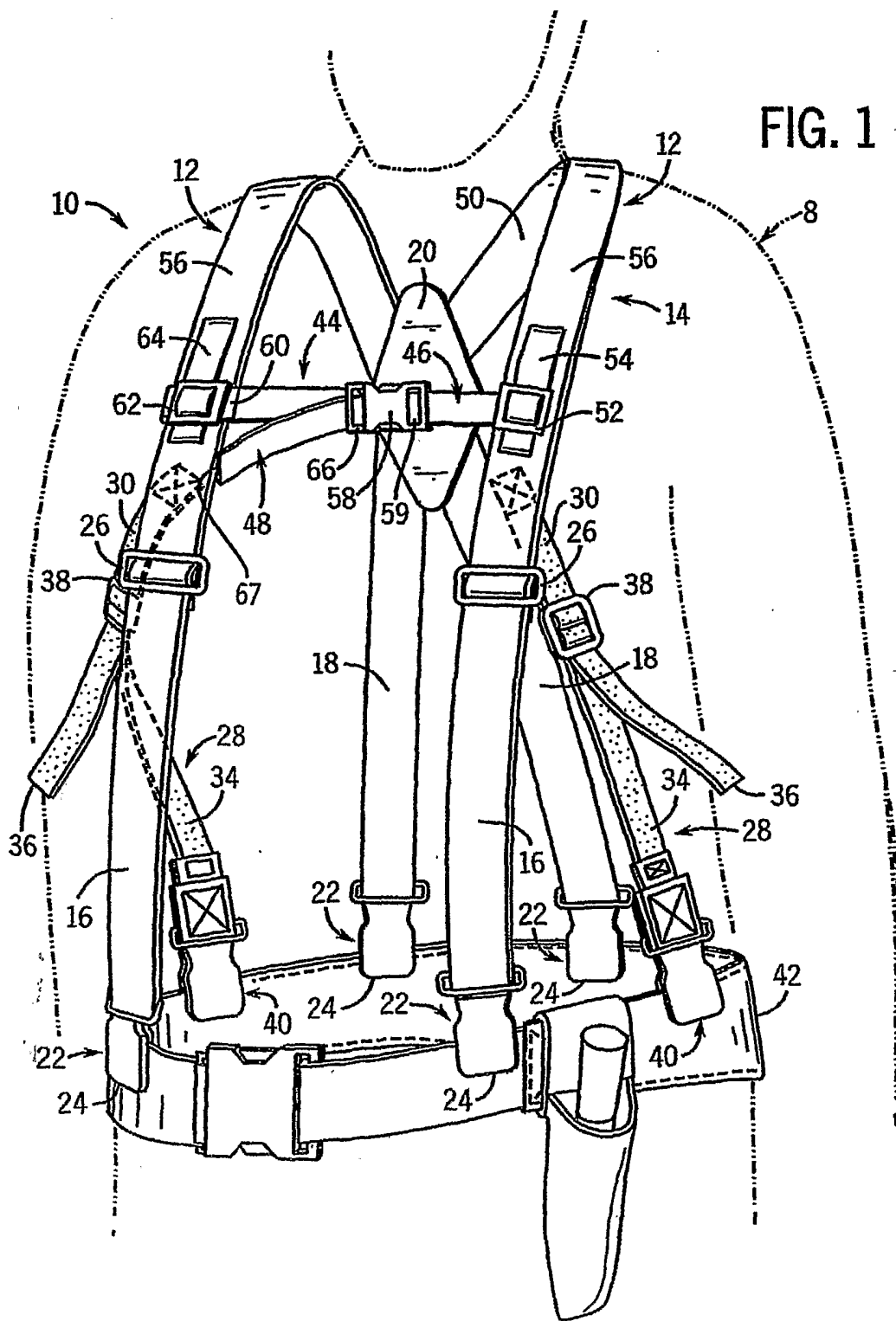
11. The method of claim 10 further comprising the step of adjusting the length of the pair of central straps prior to the step of adjusting the length of the pair of auxiliary straps.

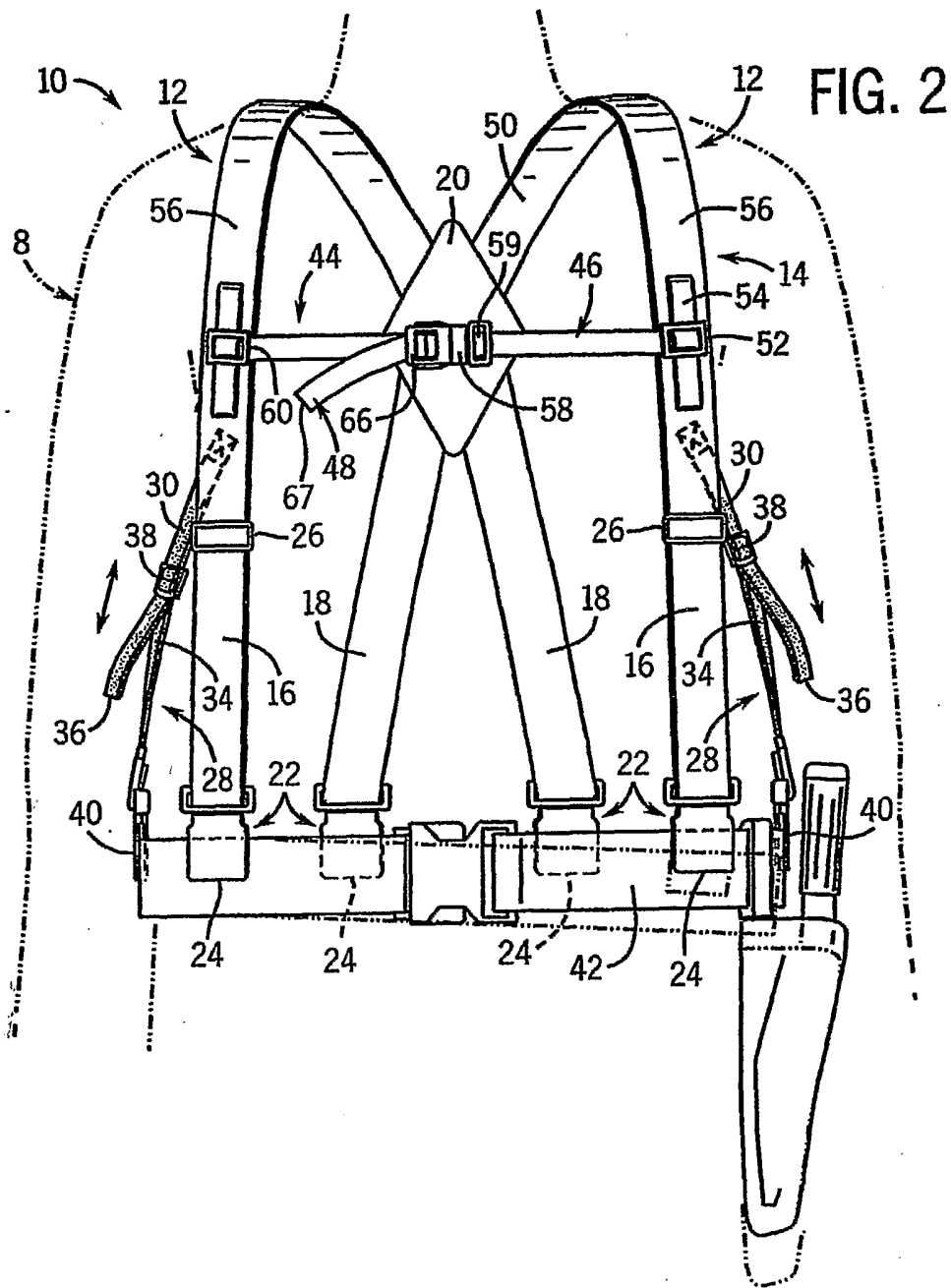
15 12. The method of claim 10 further comprising the step of readjusting the length of one or both of the pair of central straps and the pair of auxiliary straps to reposition the item on the individual.

13. A support strap assembly for use in maintaining the position of an item around the waist of an individual, the assembly comprising:

- 20 a) a pair of central straps, each strap having a front portion with a buckle and being adjustable in length, a rear portion connected to the front portion, a connector joining the rear portions of each central strap to one another, and a pair of releasable securing means disposed at each end of each of the pair of central straps, the releasable securing means adapted to engage the item; and
- 25 b) a pair of adjustable length auxiliary straps fixed to each of the pair of central straps at one end and having a releasable attaching means at the opposite end adapted to engage the item.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2004/014303

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 A45F3/14 A41F3/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A45F A41F B25H B64D A62B.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 14980 A A.D. 1915 (SHANKS EDWARD) 27 January 1916 (1916-01-27)	1-5, 10-13
Y	page 2, line 34-54 ---	6-9
X	DE 44 25 786 A (GRAJETZKI SVEN ;HACKBARTH HEIKO (DE); SCHWEIZER MICHAEL (DE)) 18 January 1996 (1996-01-18)	1-5, 10-13
Y	the whole document ---	6-9
X	GB 2 349 797 A (LAYCOCK PETER) 15 November 2000 (2000-11-15)	1-3,5, 10-13
Y	page 4, line 18 -page 6, line 6 ---	4,6-9
Y	US 6 125 475 A (TAYLOR LISA ANN) 3 October 2000 (2000-10-03) column 2, line 32-54 ---	4,6,7
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Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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- *A* document defining the general state of the art which is not considered to be of particular relevance
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- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/014303

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 164 505 A (HOLTER DEAN S ET AL) 26 December 2000 (2000-12-26) column 2, line 29,30 column 4, line 29-53 -----	6-9

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2004/014303

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