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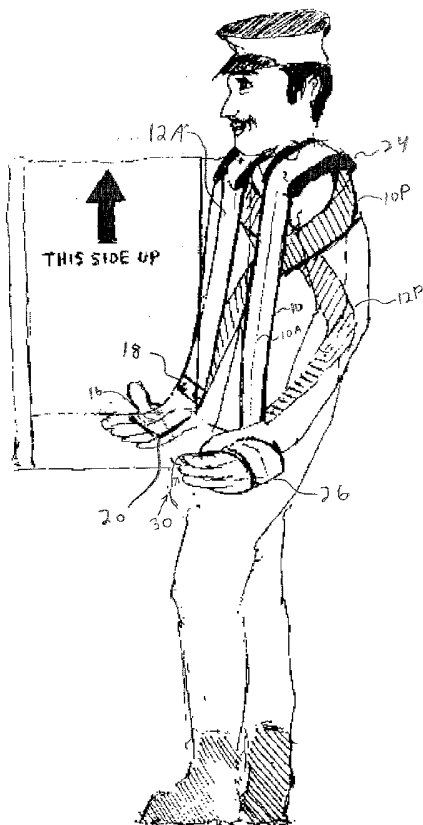
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(54) Title: APPARATUS FOR ASSISTING IN MANUALLY CARRYING AND LIFTING OBJECTS



(57) Abstract: The disclosure herein relates, inter alia, to an apparatus for aiding in manual support or lifting of an object, comprising first strap connector means connected to first means adapted to be engaged by at least a portion of one of the user's arms; second strap connector means connected to a second means adapted to be engaged by at least a portion of the other of the user's arms; and strap means extending between said first strap connector means and said second strap connector means, with an intermediate portion thereof resting on the shoulder of the user.



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TITLE OF THE INVENTION

APPARATUS FOR ASSISTING IN MANUALLY CARRYING AND LIFTING  
OBJECTS

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the priority of US Provisional Application 60/565,049,  
(The entirety of which is hereby incorporated by reference)

STATEMENT REGARDING FEDERALLY SPONSORED  
RESEARCH OR DEVELOPMENT

Not Applicable

REFERENCE TO A "SEQUENCE LISTING",  
A TABLE, OR A COMPUTER PROGRAM  
LISTING APPENDIX SUBMITTED ON COMPACT DISC

Not Applicable

BACKGROUND OF THE INVENTION

## 1. FIELD OF THE INVENTION

The present invention relates to devices used to manually lift and carry objects.

## 2. DESCRIPTION OF PRIOR ART

Since time immemorial, man has had to lift and carry loads. This is usually done with the hands and arms, though heavier loads, in a pack, are sometimes supported by the back, which is stronger than the hands or arms. Absent the pack, however, man has usually had to use his hands and arms to lift and carry loads.

There have been attempts to help man use straps to carry loads (see, e.g. US Patent 2, 718, 988 to Potts, and US Patent 1,727,873). However, none known to the inventor have the advantages of the present invention, e.g. . to optimally: divide between two hands the weight of an article being carried; cause each hand to act like a counterweight to the other; enable sharing loads between the hands, shoulders and especially the back of the user; enable the shifting of loads to the back, and by accomplishing the objects listed below.

## OBJECTS OF THE INVENTION

It is a prime object of the present invention to provide an apparatus to assist in manually lifting and carrying objects.

It is another object of the present invention to provide an apparatus to assist in manually lifting and carrying objects which reduces the load and strain on the tendons and muscles of the arms of the user.

It is another object of the present invention to provide an apparatus to assist in manually lifting and carrying objects which transfers to the shoulders and back some of the load of an object being manually lifted or carried.

It is still another object of the present invention to provide an apparatus for aiding in lifting, carrying, and transporting stretchers or gurneys bearing medical patients.

In one embodiment, it is an object of the present invention to provide a "hands-free" capability for manually (e.g. without powered machines) lifting and carrying a load.

It is still another object of the present invention to provide an inexpensive lightweight, portable, easily stored apparatus to accomplish the foregoing and other objects.

It is still another object of the present invention to provide an apparatus, to accomplish the foregoing and other objects, which consists of a limited number of

conventional elements which interact reliably and provide an apparatus having a long useful life.

## BRIEF SUMMARY OF THE INVENTION

The above objects are achieved by the present invention.

More specifically, in accordance with one aspect of the present invention, apparatus is provided for aiding a person in the manual support or lifting of an object. The apparatus includes, but is not limited to, first strap connector means, connected to first means adapted to be engaged by at least a portion of one of the user's arms; and second strap connector means connected to second means adapted to be engaged by at least a portion of the other of the user's arms. Strap means extend between the first strap connector means to the second strap connector means. An intermediate portion of the strap means is adapted to rest on the shoulder of the user.

In accordance with another aspect of the invention, apparatus for aiding in manual support or lifting of an object is provided; the apparatus includes, but is not limited to, first strap connector means connected to first means adapted to be engaged by at least a portion of one of the user's arms and second strap connector means connected to second means adapted to be engaged by at least a portion of the other of the user's arms. First strap means extend between the

first strap connector means to the second strap connector means, with an intermediate portion of the straps being adapted to rest on one of the shoulders of the user. Second strap means extend between the said first strap connector means and the second strap connector means, with an intermediate portion thereof adapted to rest on the other shoulder of the user.

In accordance with another aspect of the invention, apparatus for aiding in manual support or lifting of an object is provided. The apparatus includes, but is not limited to, first strap connector means connected to first means adapted to be engaged by at least a portion of the one of user's arms and second strap connector means connected to second means adapted to be engaged by at least a portion of the other of user's arm. Strap means having a first and a second section are provided. The first strap means section extends between the first strap connector means and the second strap connector means, and from said second strap connector means over the other shoulder of the user to said first strap connector means.

Still yet another embodiment of the apparatus for aiding in manual support or lifting of an object includes, but is not limited to: strap means having first, second, third, and fourth sections. The first section extends from a first strap connector means, located proximate to one hand, to a second strap section extending from a first shoulder to a second strap connector means, located proximate to the other hand. A third strap section extends from the second strap connector

means to the other shoulder of the user. A fourth strap section extends from the other shoulder of the user to the first strap connector means.

Still yet another aspect of the invention includes having first means adapted to be engaged by at least a portion of the arm of a user.. This first means adapted to be engaged by at least a portion of the arm of a user may take the form of a hand loop, finger loop, full glove, partial glove, finger ring, thumb loop, forearm cuff, or wrist cuff, to name a few possibilities. Some preferred embodiments have a second means adapted to be engaged by at least a portion of the arm of a user. Like the first means, the second means adapted to be engaged by at least a portion of the arm of a user may take the form of a hand loop, finger loop, full glove, partial glove, finger ring, thumb loop, forearm cuff, or wrist cuff, to name a few possibilities.

Still yet another aspect of the invention includes having a load engaging means in the form of a hook, or otherwise adapted to attach to an item selected from the following group: (shovel, toolbox, wheelbarrow, fire hose, axe, prybar, debris-lifting instrument, stretcher, gurney, rowboat oar, rowboat oars, canoe paddle).

#### BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

To these and to such other objects that may hereinafter appear, the present invention relates to an apparatus for an assisting in lifting and manually

carrying objects, as set forth in detail in the following specification and recited in the annexed claims, taken together with the accompanying drawings, wherein like numerals refer to like parts, and in which:

FIG. 1 is a front elevation view of the apparatus according to the present invention, as it would appear mounted on a user;

FIG. 2 is a rear elevation view of the apparatus of FIG. 1;

FIG. 3 is a front elevation view of the apparatus of FIG. 1;

FIG. 4 is a close-up view of a portion of the apparatus of FIG. 3;

FIG. 5 shows in close-up detail a portion of an alternative embodiment of the apparatus of FIG. 4, with the alternative strap connector means in the form of a D-ring.

FIG. 6 depicts alternative embodiments of the apparatus of FIG. 1, with the alternative load engaging means of a hook, being used to carry heavy equipment cases.

FIG. 7 depicts the apparatus of FIG. 1 in use to aid in lifting a packing box.

FIG. 8 depicts the apparatus according to FIG. 1 being used to carry a medical stretcher.

FIG. 9 depicts the apparatus of FIG. 1 being used to hold a shovel.

FIG. 10 depicts additional views of the apparatus of FIG. 1.

#### DETAILED DESCRIPTION OF THE INVENTION

FIG 1. illustrates the apparatus of the present invention (generally designated "A") according to the present invention, as it would appear mounted on the user's body as viewed from the anterior (front) side. The apparatus comprises a first strap 10 and a second strap 12. Straps 10 and 12 are made of a substantially non-stretchable material such as KEVLAR® which is a product available from Dupont, of Wilmington, Delaware. As an alternative to straps, belts, chains, monofilament fishing lines, etc. or the like could be used.

Strap 10 has a first end 11 and a second end 13; the first end 11 is connected to first strap connector means 18. The second end 13 is connected to second strap connector means 28. Strap 10 has an anterior section 10A and a posterior section 10P.

Strap 12 has a first end 15 and a second end 17; the first end 15 is connected to second strap connector means 28; the second end 17 is connected to first strap connector means 18. Strap 12 has an anterior section 12A and a posterior section 12P. Straps 10 and 12 may be integral, continuous, sectional, or separate and interconnected.

As seen in FIGS. 1-2,6-7 straps 10 and 12 are generally parallel as they traverse the anterior portion of the user's body, and cross each other as they traverse the posterior portion of the user's body. As seen in FIG. 2, straps 10 and 12 extend across the posterior of the user's body, each passing over a different one of the user's shoulders, preferably supported in part by shoulder pads 24, which are provided to cushion each shoulder. Straps 10 and 12 diagonally traverse the user's back, crossing at a crossover point 22 approximately along the user's spine. In one embodiment, the straps 10 and 12 are retained at crossover point 22 by one or more slots cut lengthwise in one of the straps, with the other strap being threaded through the one or more slots, as shown in FIGS. 2-3.

The first end 15 of strap 12 and the second end 13 of strap 10 are connected at first strap connector means 18. The first strap connector means 18 facilitates the connection of straps. It may take the form of a simple bracket through-bolted through two strap ends (as depicted in FIGS. 1-4) or, alternatively, of structure

like a buckle or D-ring or other suitable structure, including, but not limited to, structures disclosed elsewhere herein and/or depicted in FIG. 5.

Likewise, the first end 11 of strap 10 and the second end 17 of strap 12 are connected at second strap connector means 28. The second strap connector means 28 facilitates the connection of straps. It may take the form of a simple bracket through-bolted through two strap ends (as depicted in FIGS. 1-4) or, alternatively, of structure like a buckle or D-ring or other suitable structure, including, but not limited to, structures disclosed elsewhere herein and/or depicted in FIG. 5.

Aside from the straps, strap connectors 18, 28 are each connected to a different one of two load engaging means 20, 30, respectively, as is best seen in FIGS. 3-4. The first load engaging means 20 may take the form of a patch of non-slip rubber-like material. This form, which also permits use of the palms and fingers (aided by the apparatus of the present invention) is useful when the object to be lifted or carried is of a nature such that it is usually gripped in the palms and/or fingers. An example of such an object is a box full of books (such as seen in FIG. 7) or the handle of an ordinary medical stretcher (such as seen in FIG. 8), or a shovel (such as seen in FIG. 9). Alternative embodiments may use alternative load engaging means, e.g. a clip or hook 20' or 30' (such as seen in FIG. 6) to attach to the handle of a heavy equipment suitcase (such as seen in FIG. 6), or to any object having an opening or recess or suitable fitting for the clip

or hook to engage to. Indeed, many mating connectors may be used, with one half serving as the load engaging means, and the other half attached to the object to be acted upon.

In one preferred embodiment, first load engaging means 20 is operably connected to strap connection means 16, and second load engaging means 30 is operably connected to apparatus strap connection means 26 (see, e.g., FIG. 6).

In one preferred embodiment, preferably located at or near strap connection means 18 is first means adapted to be engaged by at least one of a portion of one of the user's arms 16, e.g., the hand; preferably located at or near strap connection means 28 are second means adapted to be engaged by at least one of a portion of one of the user's arms 26, e.g., the hand.

In the embodiment illustrated in FIGS. 1-4, the first means adapted to be engaged by a portion of one of the user's arms 16 is a loop into which the four fingers of the hand are placed, with the thumb outside the loop. This permits the hands, fingers, palms, wrists, arms etc. to all be employed in the usual way to pick up the exemplary box, with the important difference that now the forces needed to lift and or hold the box are not just along the muscles and tendons of the arm, but also across the shoulders and back of the user (Of course, other structures than a hand loop could be used, e.g. a full or partial glove, a ring, a thumb loop, a forearm or wrist cuff, etc.)

FIG. 5 depicts an alternative embodiment of the apparatus of FIGS. 1-4 in which a D-Ring is the strap connector means 18, which may support the load engaging means 20 (or, in some cases, itself serve as the load engaging means 20).

FIG. 6 depicts the device according to FIG. 1 in which the load engaging means takes the form of a hook 20' and a hook 30', and is used to carry a heavy suitcase by the handle.

FIG. 7 depicts the device according to FIG. 1 in which a non-slip material is used as load engaging means 20, and is used (in conjunction with the user's supporting hand underneath) to help carry a heavy box.

FIG. 8 depicts the apparatus according to FIG. 1 being used to carry a medical stretcher. While only one stretcher bearer is using the apparatus according to the present invention, both stretcher bearers could use the it.

FIG. 9 depicts the apparatus of FIG. 1 being used to hold a shovel.

FIG. 10 depicts additional views of the apparatus of FIG. 1.

While only a limited number of preferred embodiments of the present invention have been disclosed for purposes of illustration, it is obvious that many variations and modifications could be made therein. It is intended to cover all of these variations and modifications which fall within the scope of the present invention. as defined by the following claims.

## Glossary

| No. | Term                                                                             | Definition                      |
|-----|----------------------------------------------------------------------------------|---------------------------------|
|     |                                                                                  |                                 |
|     |                                                                                  |                                 |
|     |                                                                                  |                                 |
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|     |                                                                                  |                                 |
|     |                                                                                  |                                 |
|     |                                                                                  |                                 |
|     |                                                                                  |                                 |
| 10  | First strap means                                                                | strap                           |
| 11  | First end first strap means 10                                                   |                                 |
| 13  | Second end first strap means                                                     |                                 |
| 14  | Second strap means                                                               | strap                           |
| 15  | First end second strap<br>means12                                                |                                 |
| 16  | Means adapted to be<br>engaged by at least a portion<br>of one of the users arms | Hand loop (or glove or similar) |
| 17  | Second end second strap<br>means                                                 |                                 |

|    |                                                                                  |                                                                                                                |
|----|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| 18 | first strap connector means                                                      | Holds together two straps (an anterior and posterior) and connects load engaging means (which may be integral) |
| 20 | first load engaging means                                                        | Tool adapted to hold or connect to the load to be operated on.                                                 |
| 24 | shoulder pads                                                                    |                                                                                                                |
| 26 | Means adapted to be engaged by at least a portion of the other of the users arms | Hand loop (or glove or similar)                                                                                |
| 28 | second strap connector means                                                     | Holds together two straps (an anterior and posterior) and connects load engaging means (which may be integral) |
| 30 | second load engaging means                                                       | Tool adapted to hold or connect to the load to be operated on.                                                 |

## CLAIMS

I claim:

1. Apparatus for aiding in manual support or lifting of an object, comprising:

first strap connector means connected to first means adapted to be engaged by at least a portion of one of the user's arms;

second strap connector means connected to a second means adapted to be engaged by at least a portion of the other of the user's arms; and

strap means extending between said first strap connector means and said second strap connector means, with an intermediate portion thereof resting on the shoulder of the user.

2. The apparatus of claim 1, further comprising first load engaging means , said first load engaging means being operatively connected to said first strap connector means.

3. Apparatus for aiding in manual support or lifting of an object, comprising:

first strap connector means connected to first means adapted to be engaged by at least a portion of one of the user's arms;

second strap connector means connected to a second means adapted to be engaged by at least a portion of the other of the user's arms;

strap means extending between said first strap connector means and said second strap connector means, with an intermediate portion thereof resting on the shoulder of the user;

first load engaging means , said first load engaging means being operatively connected to said first strap connector means; and

second load engaging means , said second load engaging means being operatively connected to said second strap connector means.

4. Apparatus for aiding in manual support or lifting of an object, comprising:

first strap connector means connected to first means adapted to be engaged by at least a portion of one of the user's arms;

second strap connector means connected to a second means adapted to be engaged by at least a portion of the other of the user's arms;

first strap means extending between said first strap connector means and said second strap connector means, with an intermediate portion of said strap resting on one of the shoulders of the user; and

second strap means extending between said first strap connector means to said second strap connector means, with an intermediate portion thereof resting on the other shoulder of the user.

5. The apparatus of claim 1, further comprising first load engaging means , said first load engaging means being operatively connected to said first strap connector means; and second load engaging means , said second load engaging means being operatively connected to said second strap connector means.

6. Apparatus for aiding in manual support or lifting of an object, comprising:  
first strap connector means;  
second strap connector means; and  
a substantially continuous strap extending from said first strap connector means, over one shoulder of the user, through said second strap connector means, over the other shoulder of the user, and back to said first strap connector means.

10. Apparatus as in claim 9, further comprising a first means adapted to be engaged by at least a portion of one arm of the user and connected to said first strap connector means; and  
a second means adapted to be engaged by at least a portion of the other arm of the user and connected to said second strap connector means.

11. Apparatus as in claim 10, further comprising first load engaging means ,  
said first load engaging means being operatively connected to said first strap connector means; and second load engaging means , said second load engaging means being operatively connected to said second strap connector means.

12. Apparatus for aiding in manual support or lifting of an object, comprising:  
  
strap means comprising a said first section extending from a first strap connector means, located proximate to one hand, to a second strap section extending from one shoulder to a second strap connector means, located proximate to the other hand;  
  
a third strap section extending from said second strap connector means to the other shoulder of the user, a fourth strap section extending from said other shoulder of the user to said first strap connector means, with an intermediate portion of said second strap resting on said second shoulder of the user.

13. The apparatus of claim 2 wherein the first means adapted to be engaged by at least a portion of the arm of a user are one selected from the following group: (full glove, partial glove, finger ring, thumb loop, forearm cuff, wrist cuff).

14. The apparatus of claim 3 wherein the first means adapted to be engaged by at least a portion of the arm of a user are one selected from the following group: (full glove, partial glove, finger ring, thumb loop, forearm cuff, wrist cuff), and wherein the second means adapted to be engaged by at least a portion of the arm of a user are one selected from the following group: (full glove, partial glove, finger ring, thumb loop, forearm cuff, wrist cuff).

15. The apparatus of claim 4 wherein the first means adapted to be engaged by at least a portion of the arm of a user are one selected from the following group: (full glove, partial glove, finger ring, thumb loop, forearm cuff, wrist cuff), and wherein the second means adapted to be engaged by at least a portion of the arm of a user are one selected from the following group: (full glove, partial glove, finger ring, thumb loop, forearm cuff, wrist cuff).

16. The apparatus of claim 5 wherein the first means adapted to be engaged by at least a portion of the arm of a user are one selected from the following group: (full glove, partial glove, finger ring, thumb loop, forearm cuff, wrist cuff), and wherein the second means adapted to be engaged by at least a portion of

the arm of a user are one selected from the following group: (full glove, partial glove, finger ring, thumb loop, forearm cuff, wrist cuff).

17. The apparatus of claim 10 wherein the first means adapted to be engaged by at least a portion of the arm of a user are one selected from the following group: (full glove, partial glove, finger ring, thumb loop, forearm cuff, wrist cuff), and wherein the second means adapted to be engaged by at least a portion of the arm of a user are one selected from the following group: (full glove, partial glove, finger ring, thumb loop, forearm cuff, wrist cuff).

18. The apparatus of claim 11 wherein the first means adapted to be engaged by at least a portion of the arm of a user are one selected from the following group: (hand loop, thumb loop, full glove, partial glove, finger ring, thumb loop, forearm cuff, wrist cuff), and wherein the second means adapted to be engaged by at least a portion of the arm of a user are one selected from the following group: (hand loop, thumb loop, full glove, partial glove, finger ring, thumb loop, forearm cuff, wrist cuff).

19. The apparatus as in claims 13, 14, 15, 16, 17 or 18 wherein the load engaging means is adapted to attach to an item selected from the following group: (shovel, toolbox, wheelbarrow, fire hose, axe, prybar, debris-lifting instrument, stretcher, gurney, rowboat oar, rowboat oars, canoe paddle).

20. The apparatus as in claim 4 wherein one of said first strap means or said second strap means has therein a slot to permit the passage through, and relative securement of, the other of said first strap means or said second strap means.

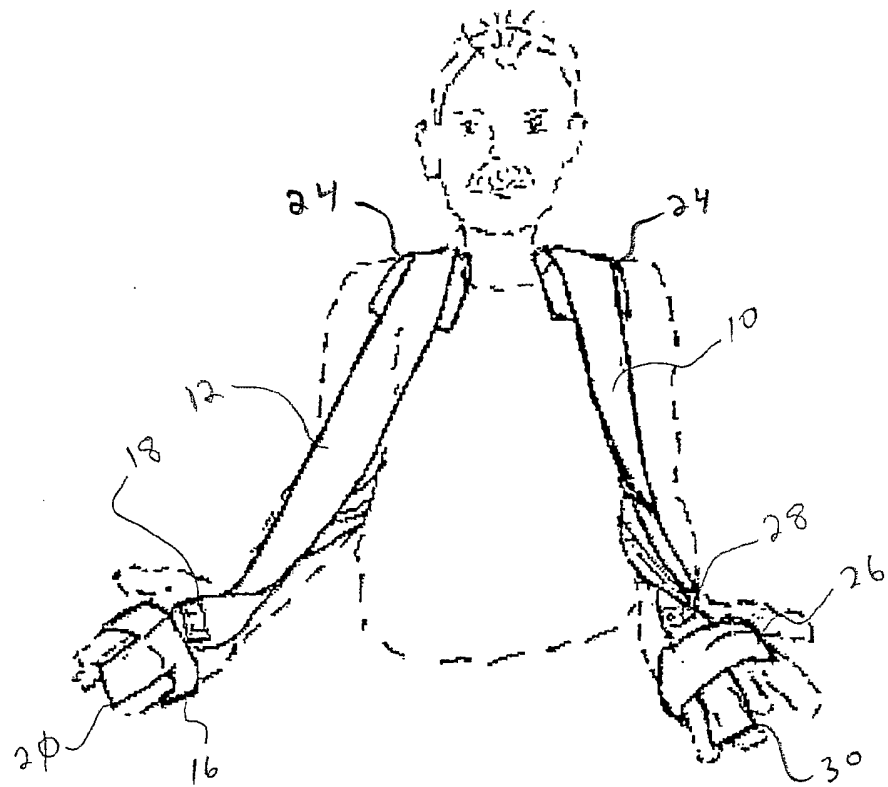
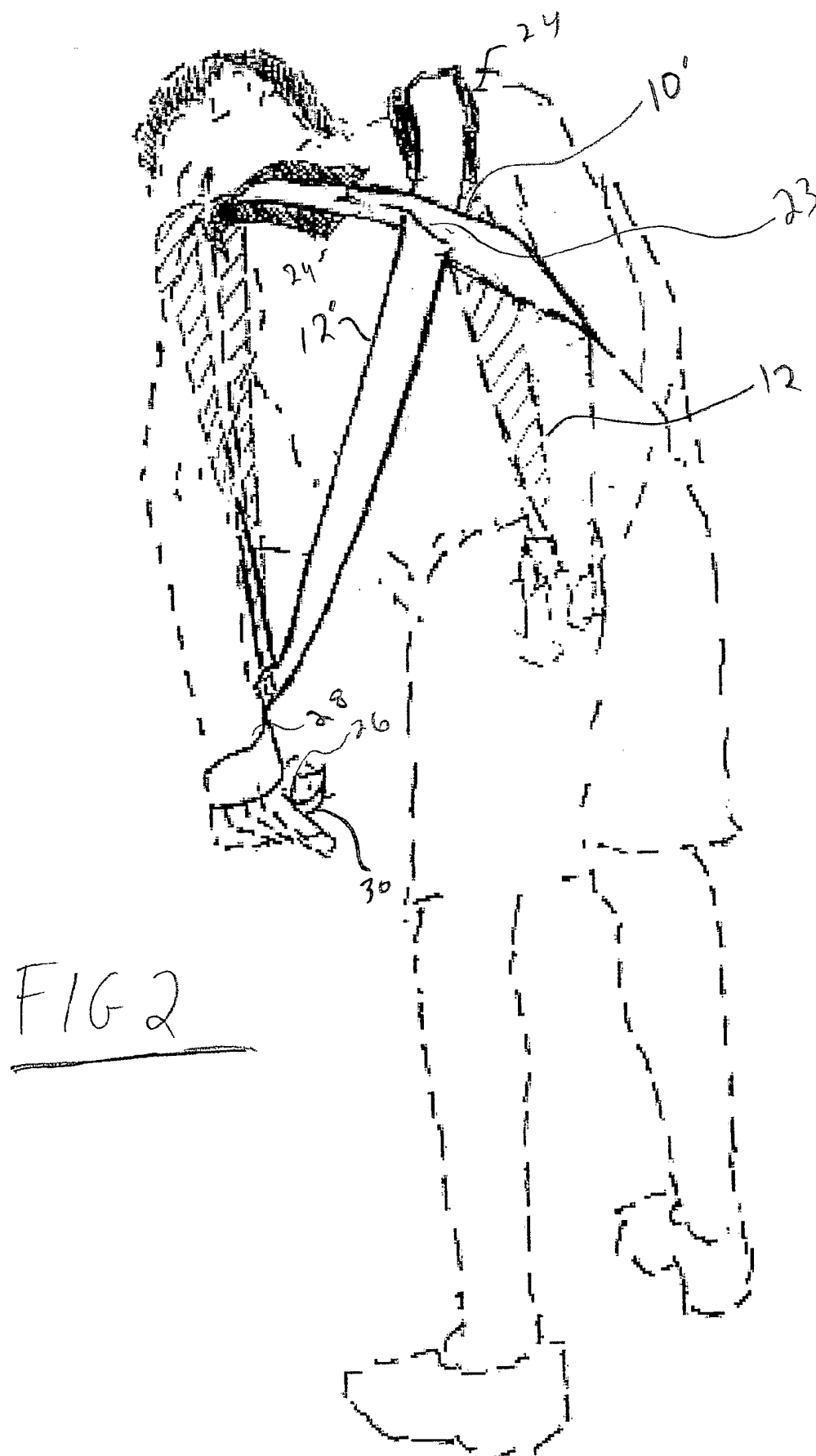


FIG 1



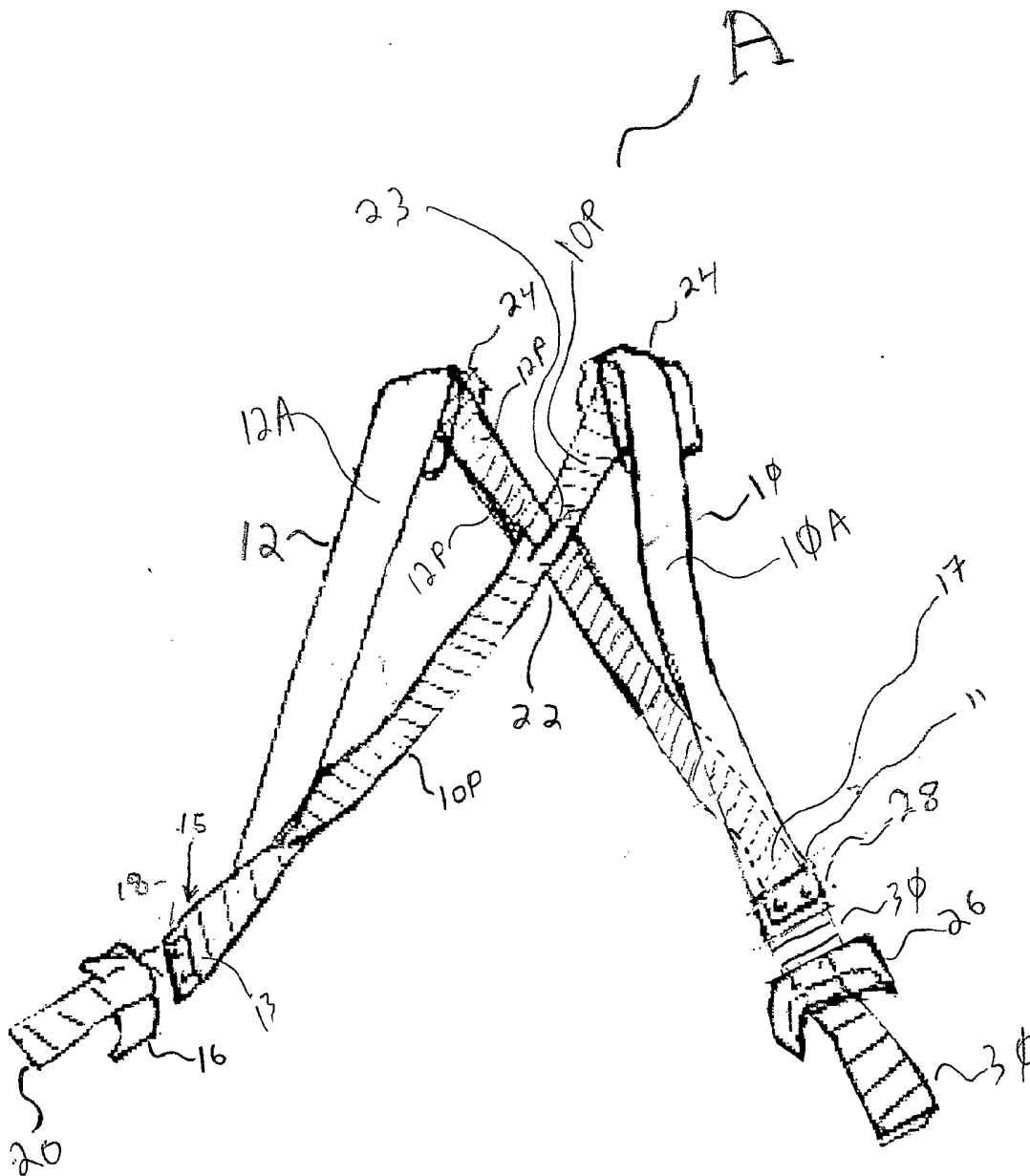


FIG 3

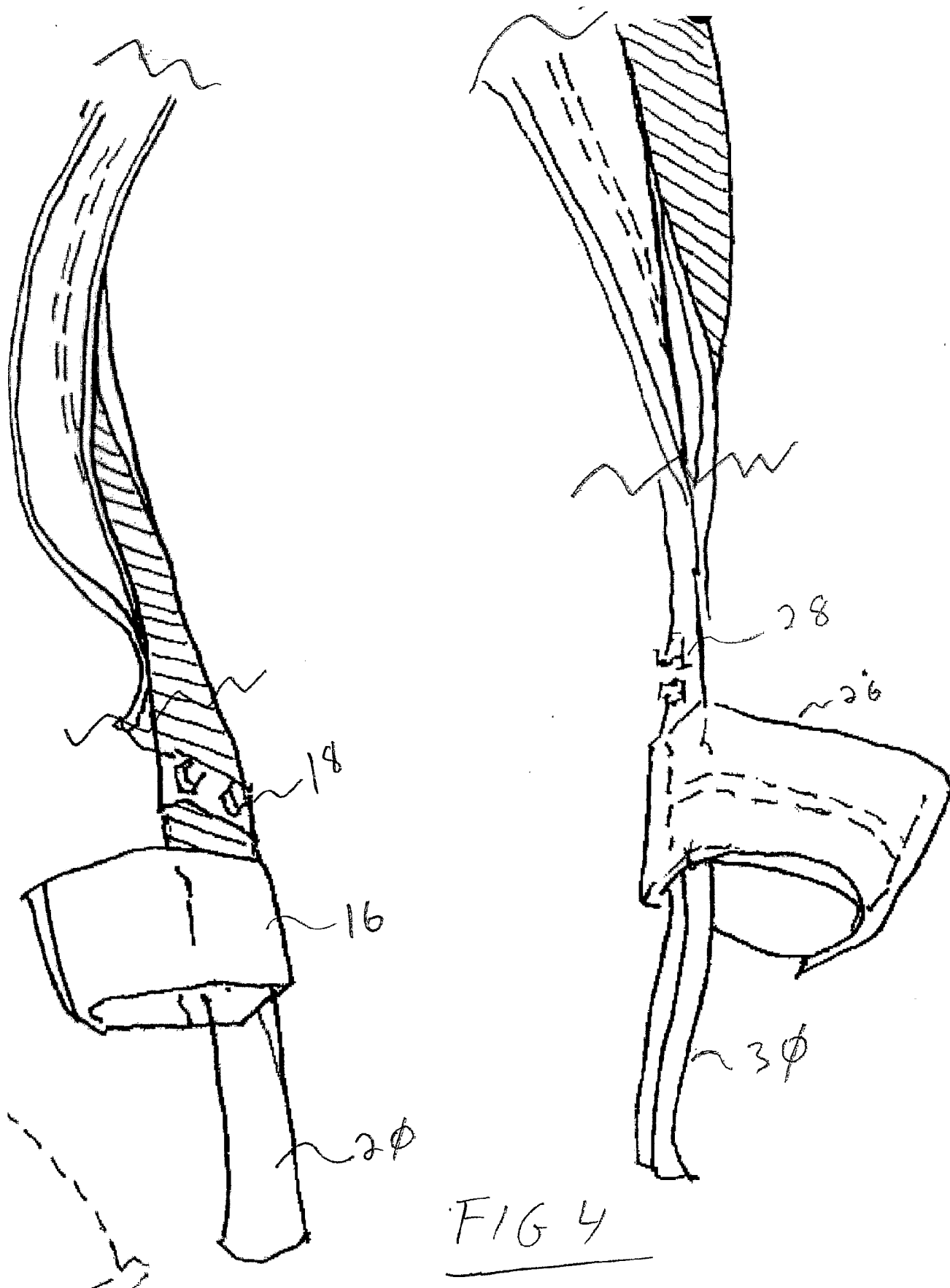


FIG 4

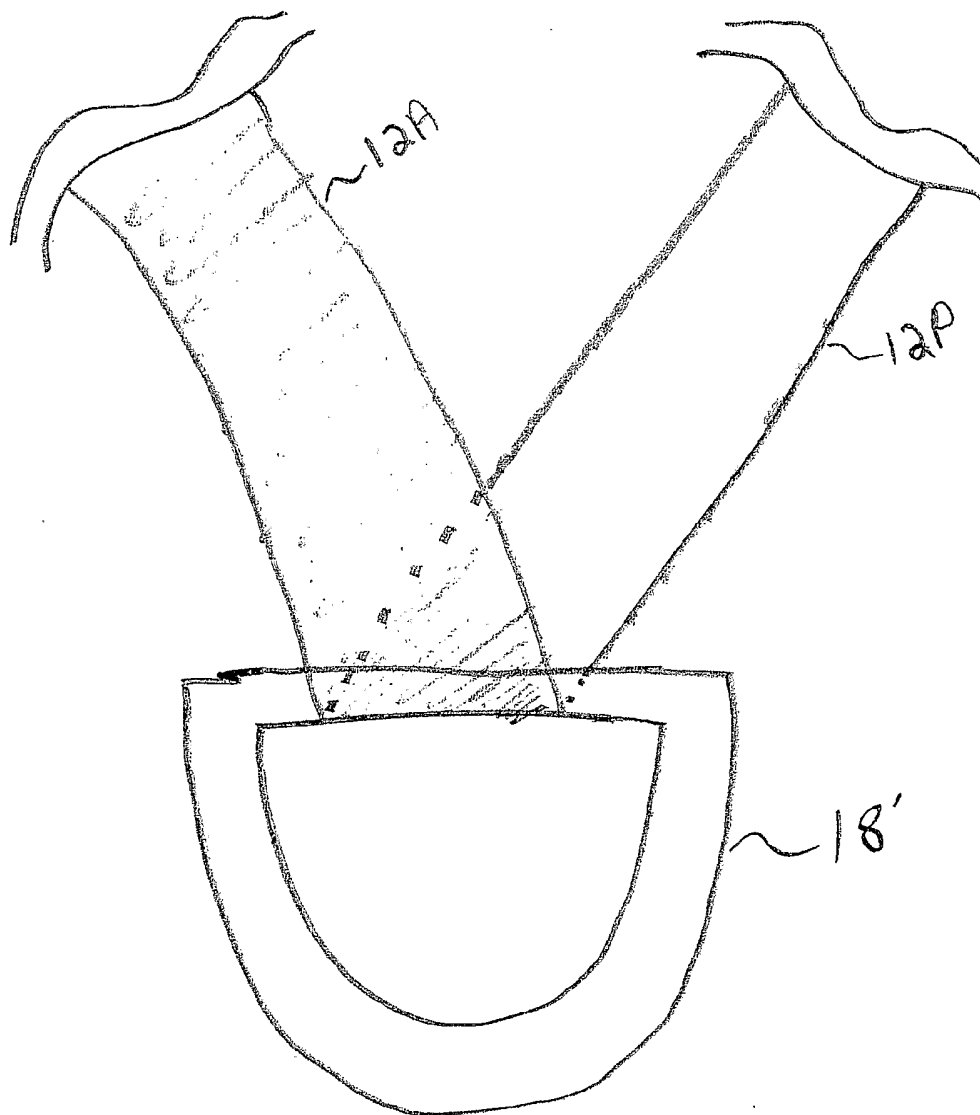
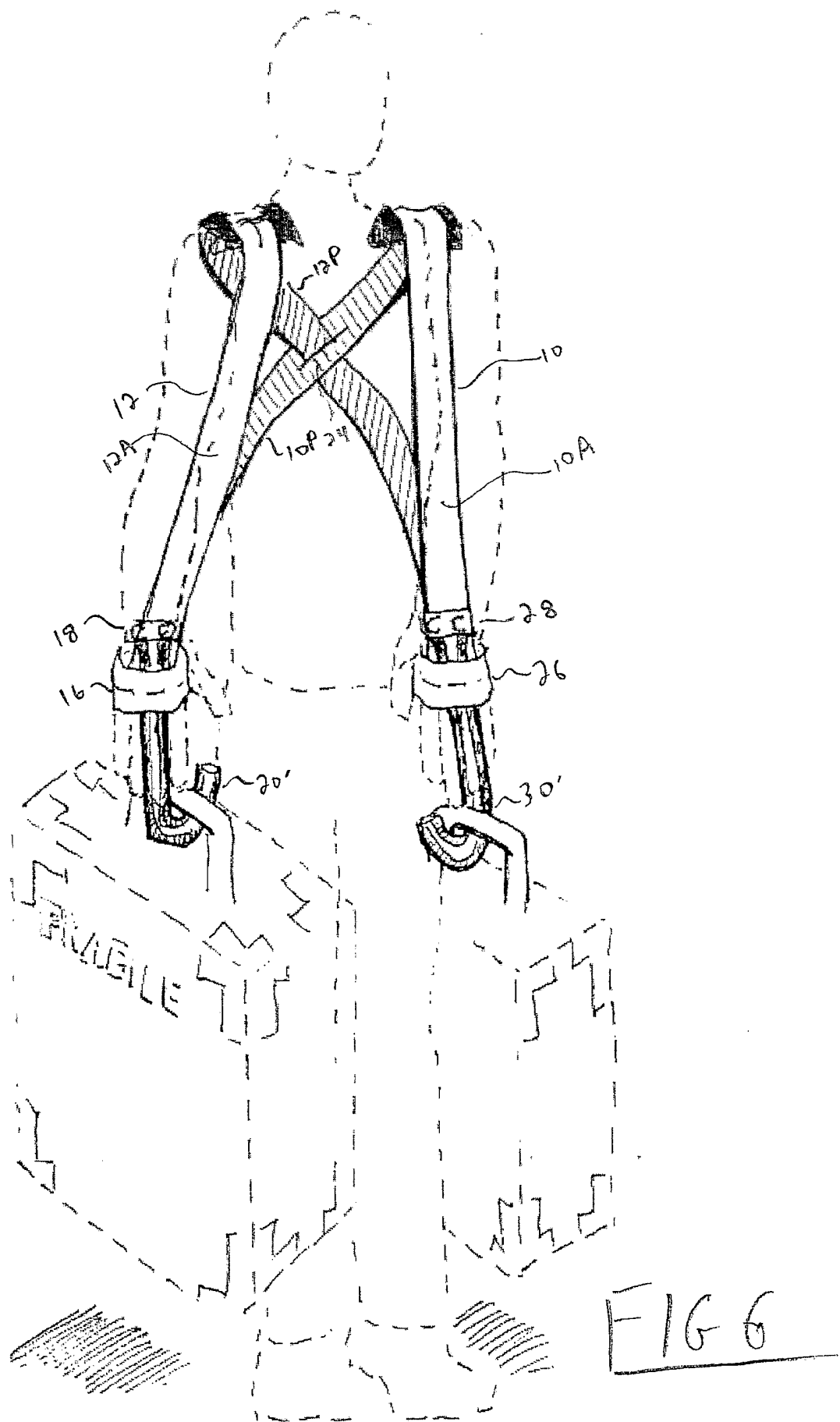
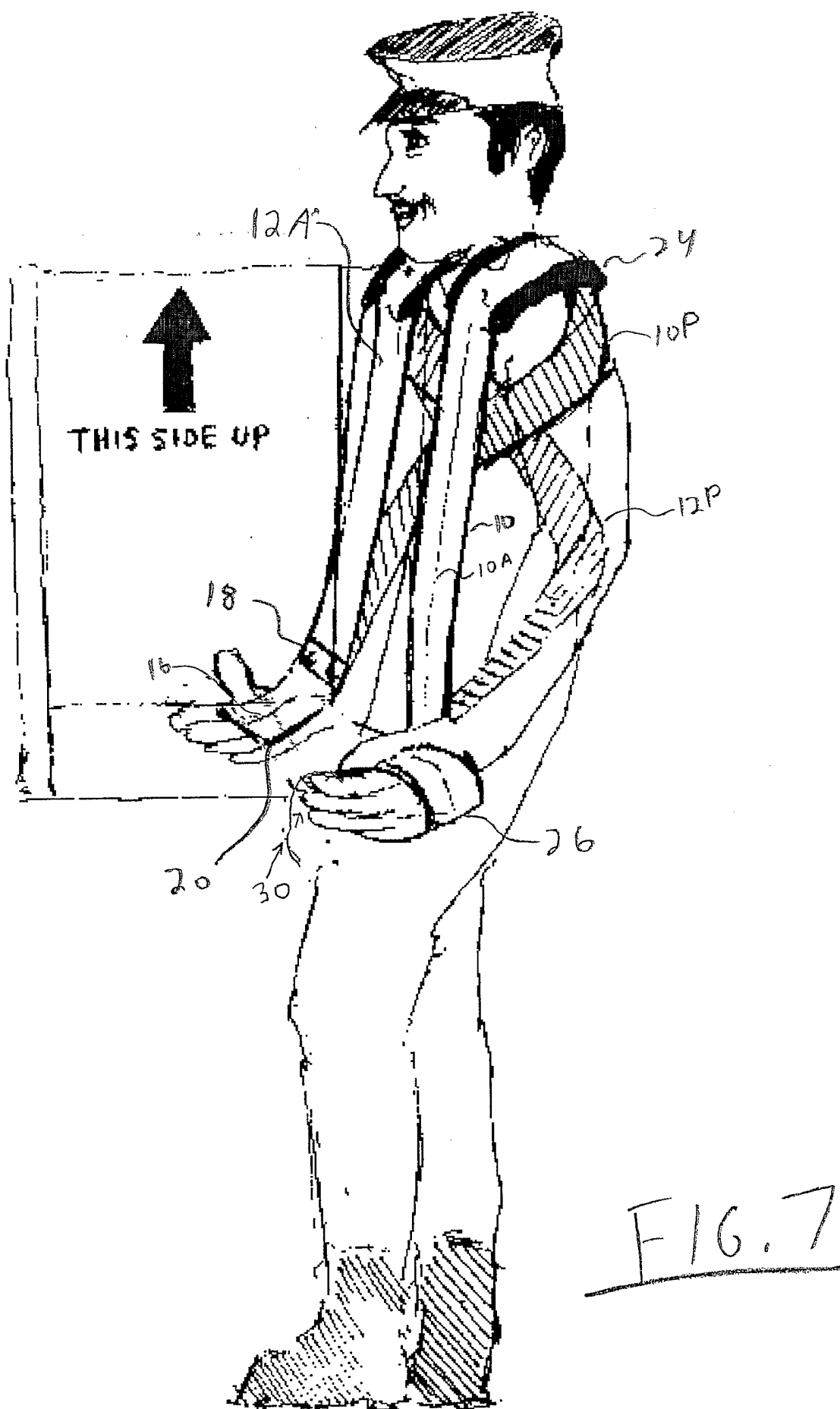


FIG. 5





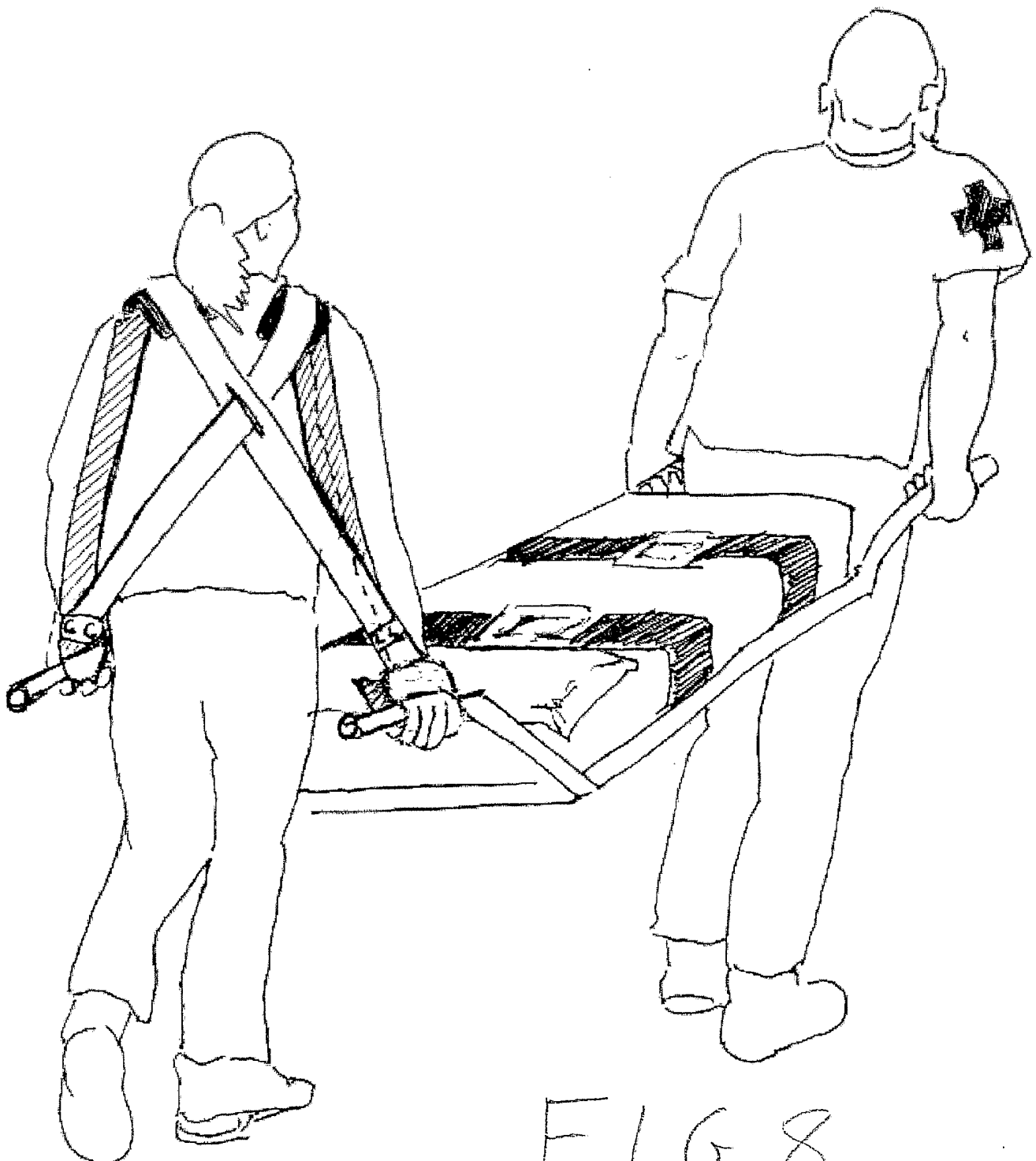


FIG. 8

