

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 748 619 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

18.12.1996 Bulletin 1996/51

(51) Int Cl.⁶: **A61G 7/10**

(21) Application number: **96610025.7**

(22) Date of filing: **12.06.1996**

(84) Designated Contracting States:
DE GB NL SE

(30) Priority: **16.06.1995 DK 236/95**

(71) Applicant: **Caretex A/S**
3000 Elsinore (DK)

(72) Inventor: **Jorgensen, Merete Winther**
3000 Elsinore (DK)

(74) Representative: **Nielsen, Henrik Sten et al**
OSTENFELD PATENTBUREAU A/S,
Bredgade 41,
P.O. Box 1183
1011 Copenhagen K (DK)

(54) **Sling or strap for an invalid hoist**

(57) A harness (10) for a lifting device for invalids (90) comprises a supporting foil (12) adapted to support the seat and the back of a person (92) who is to be moved by means of the lifting device (90), and a number of suspension straps (18, 20, 32, 38) affixed to the supporting foil (12) and serving to suspend said person in the suspension means, such as suspension loops, provided in the lifting device (90) and providing a substantially bowl-shaped seat and back support for the person. Additionally, in order to provide a universal harness for use in connection with persons who is to be moved in a substantially seated position in a bowl-shaped seat and back support, which harness is to be used in connection with persons of varying degrees of disablement requiring varying degrees of support and fixation of the person

and especially the person's torso and head, the harness has a foil extension (44) which is unfoldable from the supporting foil (12) in a direction opposite the end of the supporting foil which is adapted to support the seat of the person, i.e. from the head end of the supporting foil (12), in order to provide a head supporting and fastening means, said foil extension further having suspension straps (48, 54) for fastening the foil extension (44) in relation to the lifting device (90). Moreover or alternatively, the harness (10) has a belt (60) which may be fixated to the supporting foil (12) and may be removed from the supporting foil (12) for providing a fixation of the person (92) relatively to the supporting foil (12) by fastening the belt around the waist of a person to be supported by the supporting foil (12) of the harness.

EP 0 748 619 A2

Description

The present invention relates to a lifting device for invalids comprising a supporting foil adapted to support the seat and back of a person who is to be moved by means of the lifting device for invalids, and a number of suspension straps affixed to the supporting foil and serving to suspend said person in suspension means, such as suspension loops, provided in the lifting device and providing a substantially bowl-shaped seat and back support for the person. Harnesses of the above described kind are known in several configurations and are widely used in connection with lifting devices for invalids used in hospitals, care centres, and private homes for transporting disabled or invalid persons from one place to another, typically from their bed to a chair or in connection with a visit to the lavatory.

Several different harness configurations are known in the art including simple harnesses which are placed under the person's arms and support him/her under his/her armpits for providing a lift and support function when a person who, for that matter, is not severely invalidated, must be lifted or lowered from a lying or sitting position, and a blanket or a base sheet-like construction in which the person lying stretched may be lifted from one place to another in a lying position, typically to and from a bed. The present invention especially relates to harnesses for lifting devices for invalids and of the kind which form a bowl-like seat and back support in which a person may be moved in a substantially sitting position, typically to and from a bed, a chair, or the like.

Harness constructions and lifting devices for invalids are known from several publications, and in this context reference is made to: US-patent No. 4,918,771, EP-patent No. 0 059 141, published European patent application No. 0 547 901, GB-patent No. 2,140,773, GB-patent No. 2,223,477, GB-patent No. 2,267,475, SE-patent No. 405 547, SE-patent No. 463 347, SE-patent No. 467 088, DK-patent No. 131806, DK-patent No. 142225, DK-patent No. 159010, and DK-patent No. 162503.

One of the objects of the present invention is to provide a harness of the above described type which is universally applicable in connection with persons who has to be transported in a substantially sitting position in a bowl-shaped seat and back support, and with persons with varying degrees of invalidity conditioning different degrees of support and fastening of the person and the person's torso and head, in particular.

The above mentioned object is achieved by means of a harness of the above described kind which, in accordance with the present invention, is characterized in that in addition the harness has a foil extension which is unfolable from the supporting foil opposite to the end of the supporting foil which is provided for supporting a person's seat, i.e. from the head end of the supporting foil, for provision of a body for supporting and fixating the head, which foil extension moreover has suspension straps for fixation of the foil extension relatively to the

invalid hoist and/or that the harness has a belt which may be fastened to the supporting foil and removed therefrom for providing a fixation of the person in relation to the supporting foil by fastening the belt around the waist of the person supported in the supporting foil of the harness.

The harness according to the present invention is thus, in accordance with the above mentioned objects, characterized in that it has a foldable foil extension which when it is suspended from the lift, in the same way as the supporting foil is suspended from the lift, i.e. by means of suspension bands or straps, as the harness according to the present invention has a supplementary, or alternative, removable belt which in use, i.e. affixed to the supporting foil, may be used to fasten and secure the person who has to be moved by means of the lift and the harness relatively to the harness by fastening the belt around the waist of the respective person, but which belt, in connection with other persons who don't need such a fixation and supplementary support, may be removed from the harness, thereby providing a bowl-shaped seat and back support in which the person may sit without further fixation. In this connection, it has to be mentioned that users of invalid lifts and straps for invalid lifts, as a consequence of their dependence on other persons, such as hospital or care center staff or family members, are very sensitive to excessive and evident care which is regarded by the patient as directly humiliating. Therefore, it is of the outmost importance that supplementary supporting and fixation devices as the extensible foil extension according to the present invention and/or the fixation belt according to the present invention only be used in connection with persons who explicitly need such supplementary support and fixation and not in connection with persons who would regard fastening as being humiliating.

In the harness according to the present invention the foil extension may consist of a loose extension of the supporting foil and may be removeably fastened to the supporting foil by means of fastening means, such as buttons and buttonholes provided on the supporting foil and on the extension, respectively, or vice versa, press-fasteners or burr-tupee fastening means, the foil extension providing the head support however being adapted so as to be received in a pocket formed by the head end of the supporting foil when the foil extension unfoldable from the supporting foil is folded together when not in use.

Correspondingly, pockets for receiving the extensible foil extension may be provided in the supporting foil for receiving the belt characteristic of the present invention which can be fastened to and removed from the supporting foil, the harness having, in accordance with the presently preferred embodiment, a passage for receiving the belt. The belt may thus in use extend from the passage in the supporting foil and, when the belt is not used, be removed from the passage or, alternatively, be hidden inside the passage.

In order to fasten the belt in relation to the supporting foil, the supporting foil and the belt may be formed with arbitrary suitable locking means, such as cooperating buttons and buttonholes provided on the supporting foil and the belt, respectively, and, reversely, press-fasteners or, preferably, burr-type fastening means.

In accordance with technical principles well known within this technical field, i.e. harnesses for invalid lifting devices, the harness according to the present invention has further preferably supplementary foil extensions provided at the end of the supporting foil which is adapted to support the seat of the person, these supplementary foil extensions being adapted to be introduced between the person's thighs, and suspension straps being fastened at the extremities of these supplementary foil extensions for suspending the respective supplementary foil extensions from the invalid lift, encircling and supporting the person's thighs.

In order to provide an advantageous and appropriate support to the person who is supported by the harness, the suspension straps in the harness according to the present invention are preferably connected to the supporting foil by its extreme corners corresponding to the external corners at the main end and the end of the supporting foil which is adapted to support the seat of the person, respectively.

The harness according to the present invention may be made of any suitable material, such as natural or synthetic material, including textile materials, comprising cotton and wool materials, plastic fibrous materials, or plastic and metal foils, or combinations of such materials. The supporting foil is thus in accordance with the presently preferred embodiment for the harness according to the present invention made of woven plastic or textile fibrous foil which is preferably washable, thereby allowing the harness to be cleaned and washed periodically in order to keep a high standard of hygiene.

In order to provide an advantageous and well-defined support for the person's back and thus ensure that the person being supported in the harness according to the present invention remains positioned correctly with the seat on the seat supporting part and the back supported by the back supporting part regardless of the fact that the alternative supplementary supporting means characteristic of the invention in form of head supporting and fixing means and the removable belt are used or not used, it is preferred that the supporting foil have braces or reinforcements in the place which is adapted to support the person's back.

Hereinafter, the invention will be described in detail with reference to the drawings in which :

Fig. 1 shows a presently preferred embodiment of the harness according to the present invention seen from one side or the interior side of the harness in a totally extended state,

Fig. 2 shows the same embodiment of a harness

according to the present invention as in Fig. 1 seen from the opposite end or the far extremity having a part of the harness folded up and hidden out of sight,

Figs. 3 and 4 show a belt for use with the presently preferred embodiment of the harness according to the present invention illustrated in Figs. 1 and 2 seen in use, i.e. in connection with transporting a person suspended in the harness by means of a lift, and

Fig. 5 shows a belt for use with the presently preferred embodiment of the harness according to the present invention illustrated in Figs. 1 and 2 seen in use, i.e. in connection with transporting a person suspended in the harness by means of a lift.

Fig. 1 shows a presently preferred embodiment of a harness according to the present invention for use in connection with an invalid lifting device and designated the reference numeral 10. The harness 10 is shown in Fig. 1 from the side which in use, as shown in Fig. 5, faces the person, while the harness is shown in a different state from the opposite side, i.e. the exterior side, in Fig. 2. The harness 10 comprises a substantially H-shaped supporting foil 12 which forms leg-like extensions 14 and 16, from which extend outwardly suspension straps 18 and 20, respectively, formed by a surrounding binding which forms loops in the straps 18 and 20, which loops are kept together in each suspension strap 18 and 20 by two transversal straps, 22 and 24, corresponding to the strap 18, and another set of two transversal straps, 26 and 28, corresponding to the strap 20. The leg-like extensions 14 and 16 are formed by transversal, zig-zag sewing of the extensions of the supporting foil to the leg-like extensions. Braces or reinforcements are provided in the central area of the supporting foil 12 in form of a reinforced area 30 which forms a total of four reinforcing fins 31 serving as support and reinforcement for the person's back.

From two corners of the supporting foil 12 opposite to the leg-like extensions 14 and 16, the surrounding binding further forms two suspension loops or eyes 32 and 38 which, as the suspension loops 18 and 20, have respective transversal connecting straps, the suspension loop 32 having two transversal connecting straps 34 and 36, while the suspension loop 38 similarly has two transversal connecting straps 40 and 42.

In accordance with the basic teachings of the present invention, namely that a harness of the above mentioned kind for use in connection with persons who need further support and possibly fastening, the harness 10 has a further foil extension 44 extensive in relation to the supporting foil 12 and serving to fasten and secure the user's head in relation to the harness and the lifting device from which the harness is suspended. The extension 44 has a surrounding binding 46 which, as in

the case of the above described supporting foil 12, forms suspension loops or eyes 48 and 54 with each two transversal connecting straps 50 and 52, and 55 and 58, respectively.

The foil extension 44 may, as seen in Fig. 2, be folded up, received and hidden in a pocket behind the back support 30, when the foil extension 44, i.e. the head support or the head fastener does not have to be used.

In accordance with the alternative characteristics of the harness according to the present invention, the harness has a removable belt 60 which forms two reinforced, rigid belt portions 62 and 64 extending from the back reinforcement 60 and which are connected by means of a thin central belt section 66, as illustrated clearly in Figs. 3 and 4. Through the belt sections 62, 64, and 66 extends a central strap shown in Fig. 3, which strap is sewn to the section 62 in an area designated the reference numeral 68 and to the section 64 in an area designated the reference numeral 70. This central belt is provided at its opposite ends with fastening means, one of which is shown in Figs. 1-4 and designated the reference numeral 72, whereas the other is hidden in Figs. 1-3, but shown in Fig. 4. The belt 60 may be entirely extracted from a passage formed in the supporting foil 12 behind or underneath the reinforcements 30. To ensure that the belt 60 cannot be lost in use, the belt 60 has, as shown in Fig. 4, a burr-type tape, preferably the inactive component which can cooperate with a complementary, active burr-type element sewn in the above mentioned passage behind the reinforcements 30.

Further, as shown in Fig. 2 and Fig. 5, the harness has straps 78 and 80 which are mounted in the immediate extension of the suspension straps 32 and 38, respectively, and which can be used by both the staff, before using the harness, and the user who can use the straps 78 and 80 as handles.

Fig. 5 shows the intended use of the harness 10, where the harness 10 is suspended from a lift which is designated the reference numeral 60 in its entirety. The above mentioned leg-like extensions 14 and 16 of the supporting foil 10 are in this application introduced between and around the thighs of a person 92 and thus constitute a seat support, while the back reinforcement 30 supports the person's back. Fig. 5 illustrates also how the foil extension 44 provides a head support or fastener for the user 92. Moreover, Fig. 5 shows a series of the above mentioned elements, such as the strap 80.

Claims

1. A harness (10) for a lifting device for invalids (90) comprising a supporting foil (12) adapted to support the seat and back of a person (92) who is to be moved by means of said lifting device (90), and a number of suspension straps (18, 20, 32, 38) affixed to said supporting foil (12) and serving to suspend

said person in suspension means, such as suspension loops, provided in said lifting device (90) and providing a substantially bowl-shaped seat and back support for said person, **CHARACTERIZED** in said harness further having a foil extension (44) extending from said supporting foil (12) opposite the end of the supporting foil (12) which is adapted to support the seat of said person, i.e. from the head end of said supporting foil (12), to provide a head supporting and fastening means, which foil extension further has suspension straps (48, 54) for fastening said foil extension (44) relatively to said lifting device (90), and/or that said harness (10) has a belt (60) which may be fastened to said supporting foil (12) and removed therefrom for providing a fixation of said person in relation to said supporting foil (12) by fastening said belt (60) around the waist of said person supported in said supporting foil (12) of said harness (10).

2. A harness (10) according to claim 1, **CHARACTERIZED** in that said supporting foil (12) has at its head end a pocket for receiving said foil extension (44) when the latter is folded up.

3. A harness (10) according to claim 1 or 2, **CHARACTERIZED** in that said supporting foil (12) has a passage for receiving said belt (60).

4. A harness (10) according to any of the claims 1-3, **CHARACTERIZED** in that said belt (60) may be fastened to the supporting foil (12) by means of locking means such as cooperating buttons and buttonholes, press-fasteners or, preferably, burr-type fastening means (76).

5. A harness (10) according to any one of the claims 1 to 4, **CHARACTERIZED** in that said supporting foil (12) has at the end being adapted to support the seat of said person (92) further foil extensions (14, 16) adapted to be fitted between said person's thighs, and that suspension straps (32, 38) are fastened at the extremities of said further foil extensions.

6. A harness (10) according to any one of the claims 1 to 4, **CHARACTERIZED** in that said suspension straps (18, 20, 32, 38) are connected to said supporting foil (12) by the external corners of said supporting foil corresponding to the head end and the end of the supporting foil being adapted to support the seat of said person, respectively.

7. A harness (10) according to any one of the claims 1 to 6, **CHARACTERIZED** in that said supporting foil (12) is a fibrous, woven, plastic or textile foil.

8. A harness (10) according to any one of the claims

1 to 7, CHARACTERIZED in that said supporting foil (12) is provided with braces (30, 31) or reinforcements in the place in which it is adapted to support the person's back.

5

10

15

20

25

30

35

40

45

50

55

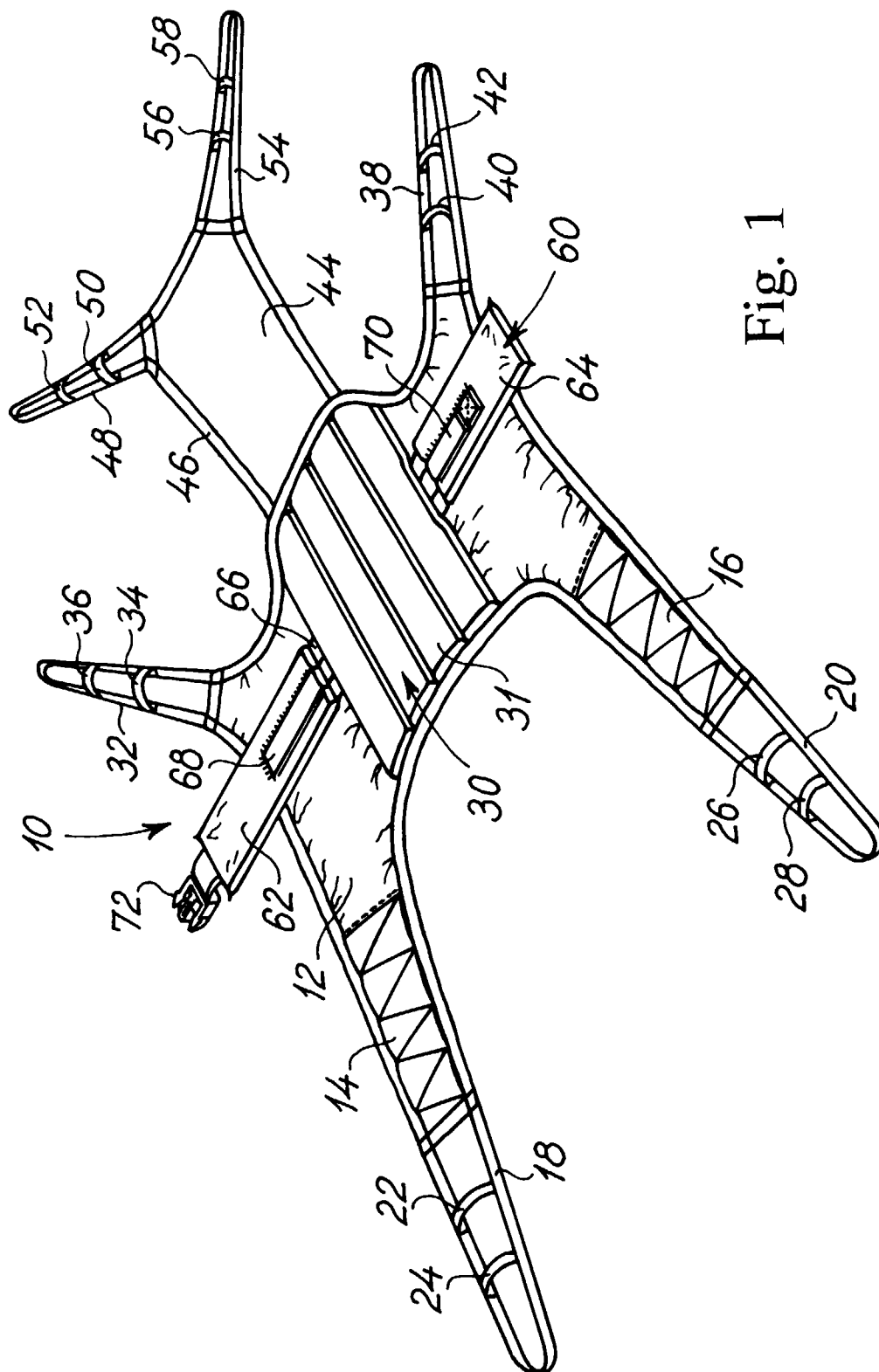
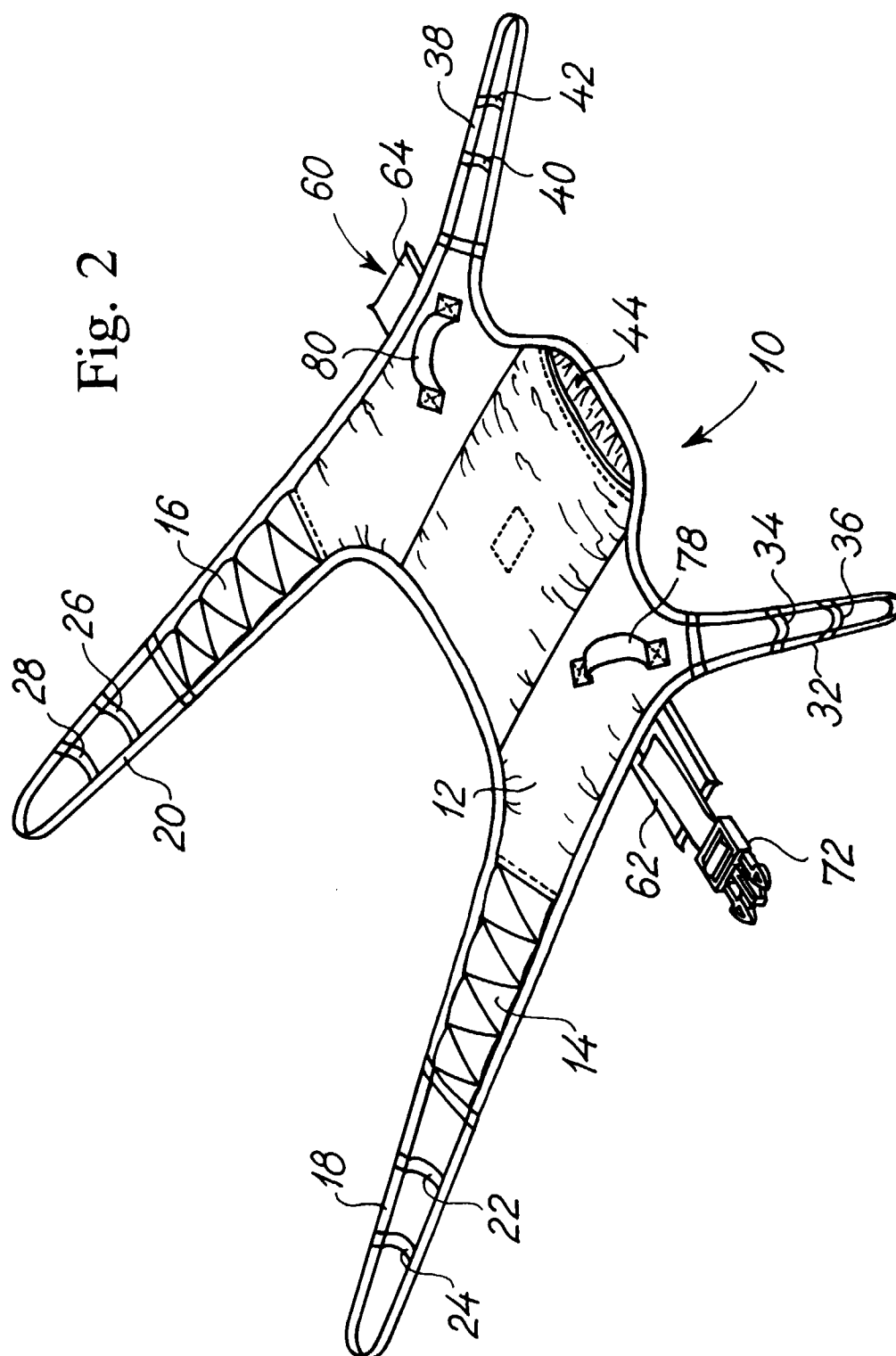


Fig. 1



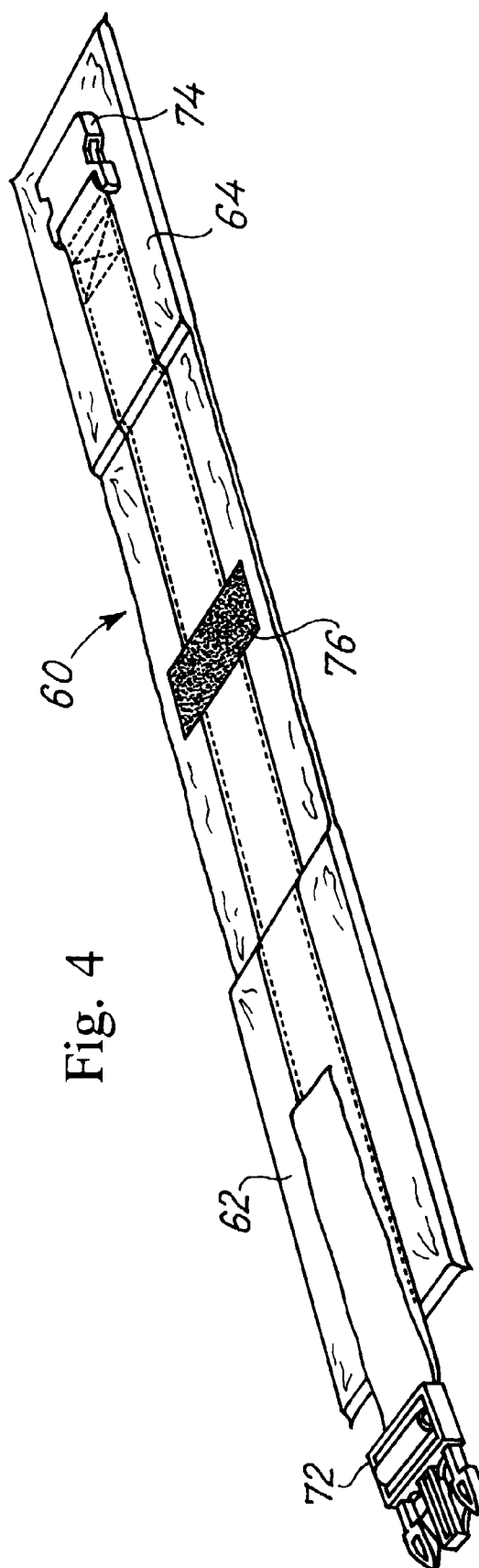
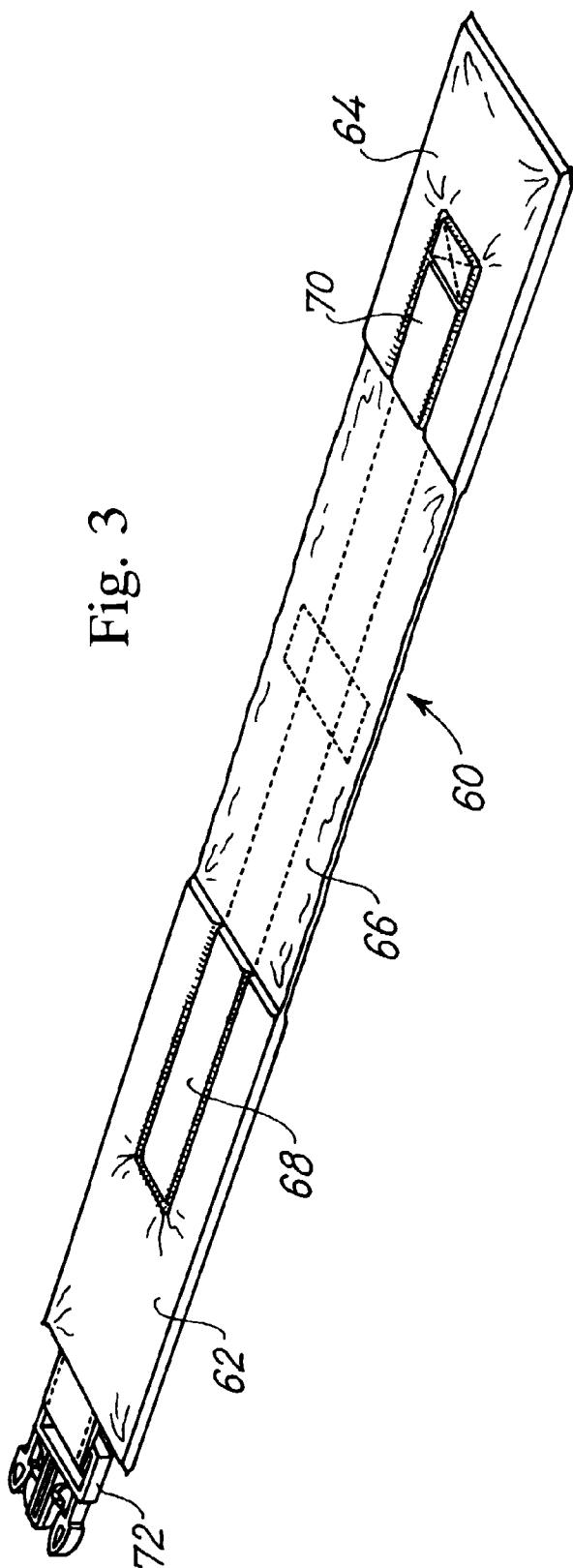


Fig. 5

