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(54) **Title**: MOBILE HYDRATION SYSTEM

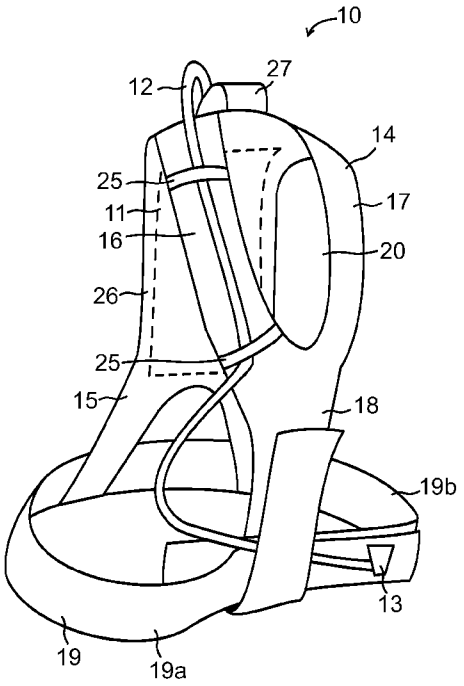


Fig. 1

(57) **Abstract**: A mobile hydration system (10) comprising a fluid container (11), a drink tube (12), a mouthpiece (13) and a harness (14) to be carried by a person (29), so that a person (29) can engage the mouthpiece (13) to obtain fluid from the fluid container (11). Said harness (14) comprises first and second shoulder straps (16, 17) and a back portion (15) provided with a pocket (26) holding the fluid container (11), so that a person (29) can wear the harness (14) carrying the fluid container (11) on the back (32). The first and second shoulder straps (16, 17) are connected to the back portion (15) and to a single front strap (18), wherein the first and second shoulder straps (16, 17), possibly together with portions of the back portion (15) and the front strap (18), form a closed loop to be slipped over the head (31) of a person (29). The back portion (15) is connected to a chest strap (19) provided with a fastener (21, 22), so that the chest strap (19) can be adjustably fitted around the lower chest of a person (29). The front strap (18) is provided with fastening means (23, 24), wherein the front strap (18) is arranged to be looped around the chest strap (19) and fastened, so that the harness (14) can be adjustably and snugly fitted around the chest of a person (29) wearing the system (10).

MOBILE HYDRATION SYSTEM

FIELD OF THE INVENTION

The present invention relates to a mobile hydration system. The need for fluid arises all the time and the mobile hydration system is designed for active and needing people within for example sports, outdoor life, industry and medical care.

PRIOR ART

Today there are several different types of mobile hydration devices and systems. The most common is backpacks with accompanying fluid containers. These fluid containers are generally made of silicone and are reusable. The fluid is sucked up from the container through a flexible tube and a non return valve to the mouthpiece.

WO2008/130324 discloses a mobile hydration system comprising a shirt/top having a back pocket designed to hold a fluid container in place during use. The pocket arranged in the shirt/top is adapted to prevent the fluid container from displacement. Generally, this is provided by the design of the pocket and by means of the elastic material in the shirt/top and the pocket.

WO99/01045 discloses a sport shirt having an integrated water bag with a flexible tube extending from the water bag towards a user. The flexible tube is preferably provided with a bite nozzle for controlling the water flow. The shirt and the pocket are designed to prevent the fluid container from being displaced which is achieved by means of the design of the pocket and by means of the elastic material in the shirt and the pocket.

SUMMARY OF THE INVENTION

One object of the present invention is to provide a mobile hydration system which is of low weight, easy to put on and comfortable to wear and use by a person.

The present invention includes a mobile hydration system comprising a flexible fluid container, a flexible drink tube, a mouthpiece and a harness to

be carried by a person, wherein the drink tube is provided with the mouthpiece and is connected to the fluid container so that a person can engage the mouthpiece to obtain fluid from the fluid container, and wherein said harness comprises first and second shoulder straps and a back portion provided with a pocket holding the fluid container, so that a person can wear the harness carrying the fluid container on the back, characterised in that a first end of the first and second shoulder straps are connected to the back portion, and a second end of the first and second shoulder straps are connected to a single front strap, wherein the first and second shoulder straps, possibly together with portions of the back portion and the front strap, form a closed loop to be slipped over the head of a person, that the back portion is connected to a chest strap provided with a fastener, so that the chest strap can be adjustably fitted around the lower chest of a person, and that the front strap is provided with fastening means, wherein the front strap is arranged to be looped around the chest strap and fastened, so that the harness can be adjustably and snugly fitted around the chest of a person wearing the system.

The back portion can extend from the shoulder straps at a position close to the neck and downwards along the spine of the person, wherein the pocket can be arranged so that the fluid container is carried between the shoulder blades of a person wearing the system. This results in a system that is snugly fitted and comfortable to wear, also during a sport activity.

The front strap extends from the shoulder straps and downwards along the sternum of a person wearing the system, so that the front strap is running between the breasts of said person. This results in a system that is securely attached and also comfortable to wear for both male and female users, also during a sport activity.

The fluid inside the fluid container can be pressurized, so that the fluid is pushed out through the drink tube when a valve of the mouthpiece is opened. Hence, a person does not need to suck or draw fluid from the fluid container for replenishment. Instead the fluid is pushed into the mouth by the positive pressure in the fluid container, so that a person can be provided with fluid with less effort. The fluid container can be arranged as a bag in a flexible

and impermeable material, which can make it possible to obtain a positive pressure in the fluid container. A certain space for air or gas should remain after filling of fluid. Fluid is brought through the drink tube and can be pushed out when the valve, which is closed in its default position, is opened. Fluid is easily filled from a bottle or possibly a tap. Alternatively the fluid container is delivered filled with fluid, wherein the fluid container is provided with fluid and possibly pressurized air or gas.

The chest strap can comprise a first chest strap portion provided with a first fastener on the inner side of the first chest strap portion, and a second chest strap portion provided with a second fastener on the outer side of the second chest strap portion for detachable and adjustable fastening to the first fastener. Hence, the chest strap can be arranged with two portions connected to the back portion so that a person can grip the portions, respectively, and wrap them around the lower front part of the chest and connect them to each other to form a tight-fitted and comfortable harness.

The front strap can be provided with first and second fastening means, wherein the front strap is arranged with a free end portion when the first fastening means is disengaged from the second fastening means. Both the first and second fastening means can be provided on the outer or front side of the front strap, so that the front strap easily can be looped around the closed chest strap and detachably and adjustably fastened. This results in a system that is snugly and comfortably secured around the chest of a person.

The pocket can be provided with a flap for closing the pocket. The flap can be provided with a through aperture through which the drink tube extends. The drink tube can be fixed in the fluid container. When the drink tube extends through the aperture in the closed flap, the fluid container will be fixed inside the pocket.

The fasteners and fastening means can be hook and loop fasteners, such as Velcro™. For example, the fasteners and fastening means are arranged as elongated strips of hook and loop fasteners arranged along the chest straps and front strap, respectively, for detachable and adjustable fas-

tening. Of course other types of fasteners can also be used, such as buttons, strings, etc.

Further characteristics and advantages of the present invention will become apparent from the description of the embodiments below, the appended drawings and the dependent claims.

SHORT DESCRIPTION OF THE DRAWINGS

The invention will now be more closely described with the aid of embodiments and with reference to the appended drawings, in which

Fig. 1 is a schematic perspective view of a mobile hydration system according to one embodiment of the invention, wherein a harness of the mobile hydration system is in a closed position.

Fig. 2 is a schematic perspective view of the mobile hydration system according to Fig. 1, wherein the harness is in an open position,

Fig. 3 is a schematic front view of the mobile hydration system according to Fig. 1,

Fig. 4 is a schematic back view of the mobile hydration system according to one embodiment of the invention,

Fig. 5 is a schematic back view of the mobile hydration system according to another embodiment of the invention,

Fig. 6 is a schematic perspective view of the front of a person wearing the mobile hydration device according to Fig. 4, and

Fig. 7 is a schematic perspective view of the back of a person wearing the mobile hydration device according to Fig. 4.

DETAILED DESCRIPTION OF THE INVENTION

In Figs. 1-3 a mobile hydration system 10 according to one embodiment of the invention is illustrated. The mobile hydration system 10 comprises a flexible fluid container 11, a flexible drink tube 12, a mouthpiece 13 and a harness 14 to be carried by a person. The fluid container 11 is illus-

trated by means of a dashed line in the drawings. The flexible drink tube 12 is provided with the mouthpiece 13 and is connected to the fluid container 11 so that a person can engage the mouthpiece 13 to obtain fluid from the fluid container 11.

For example, the fluid container 11 is formed in a plastic material, such as polyethylene or similar. The flexible tube 13 is for example formed in a plastic material, such as polyethylene or polyvinylchloride or similar. For example, the flexible tube 13 is formed in polyethylene, wherein the fluid container 11 is formed in another plastic material than polyethylene. For example, the fluid container 11 is disposable to avoid risks and problems with bacteria and contamination. The plastic material used is for example recyclable and emits only water and carbon dioxide upon combustion. According to one embodiment, the fluid container 11 is arranged with a plurality of compartments for stabilizing the fluid container. The fluid container 11 is for example formed as a bag of two joined films of airtight or gasproof material. The drink tube 12, for example, extends through a leak-proof tube outlet arranged centrally in the container to a position in which one end is arranged close to the bottom of the container. The seal between the drink tube 12 and the container 11 around the flexible tube outlet prevents fluid leakage and makes it possible to maintain a considerable positive pressure in the container 11. Further, the two films are for example connected directly to each other in elongated wall portions forming said compartments.

The drink tube 12 projects from the container 11 and is provided with the mouthpiece 13, the mouthpiece 13 being provided with a valve. The valve makes it possible to blow in air to provide positive pressure in the container 11. The valve is also used to open up for a fluid flow when the user wants to drink.

The harness 14 comprises a back portion 15, a first shoulder strap 16, a second shoulder strap 17, a front strap 18 and a chest strap 19. The back portion 15 is provided with a pocket holding the fluid container 11, which is described in more detail with reference to Figs. 4 and 5, so that a person can wear the harness 14 carrying the fluid container 11 on the back. The harness

14 is, for example, made of flexible fabric or similar. The harness 14 is illustrated in an open position for putting on and taking off in Fig. 2 and in a closed position for wearing in the other figures.

A first and upper end of the first and second shoulder straps 16, 17 are connected to the upper part of the back portion 15, and a second end of the first and second shoulder straps 16, 17 are connected to the single front strap 18, wherein the first and second shoulder straps 16, 17 together with the back portion 15 and the single front strap 18 form a closed loop with an opening 20 to be slipped over the head of a person. For example, the back portion 15 is integrated with the shoulder straps 16, 17 which, for example, are integrated with the front strap 18.

The lower part of the back portion 15 is connected to the chest strap 19. For example, the chest strap 19 comprises a first chest strap portion 19a and a second chest strap portion 19b, wherein a first end of the chest strap portions 19a, 19b are fastened to the back portion 15 and a second end thereof is free when disengaged from each other as illustrated in Fig. 2. Hence, the first chest strap portion 19a comprises a first fastener 21 and the second chest strap portion 19b comprises a second fastener 22, wherein the first fastener 21 is arranged for detachable and adjustable fastening to the second fastener 22. The second fastener 22 is illustrated in Fig. 2 by means of a dashed line. For example, the first and second fasteners 21, 22 comprises a hook and loop fastener, such as Velcro™. The chest strap 19 is arranged to encircle the lower chest of a person, so that a person can, from the open position illustrated in Fig. 2, wrap the chest strap portions 19a, 19b around the lower chest and fasten the chest strap portions 19a, 19b to each other at the lower front part of the chest to close the chest strap 19.

The front strap 18 is connected to the shoulder straps 19a, 19b and terminates in a free end when the harness 14 is in the open position as illustrated in Fig. 2. The front strap 18 is provided with a first fastening means 23 and a second fastening means 24, which is illustrated in Fig. 2. The first fastening means 23 is arranged at the free end of the front strap 18 and the second fastening means 24 is arranged at a distance from the first fastening

means 23, so that the front strap 18 can be looped around the closed chest strap 19 and detachably and adjustably fastened by means of the fastening means 23, 34 for a tight and secure fit to the chest of a person. For example, the first and second fastening means 23, 24 comprises a hook and loop fastener, such as Velcro™. The shoulder straps 16, 17 and the front strap 18 form a Y-shape, which is clearly illustrated in Fig. 3, wherein the front strap 18 is arranged to be positioned between the breasts of a person wearing the harness 14.

According to the illustrated embodiment the drink tube 12 extends from the fluid container 11 and runs along the first shoulder strap 16 and is terminated with the mouthpiece 13 with the valve. For example, the first shoulder strap 16 is provided with loops 25 through which the drink tube runs for holding the drink tube in position. Further, the loop formed by the front strap 18 when in the closed position forms a holder for the drink tube 12, so that the drink tube can be kept in a storing position when no fluid replenishment is required by the person wearing the system 10. Hence, a person can retrieve the drink tube 12 and the mouthpiece 13 from its storing position running through the loop formed by the front strap 18 and put the mouthpiece 13 to the mouth for fluid replenishment and then put it back in its storing position again.

With reference to Fig. 4 the mobile hydration system 10 according to one embodiment of the invention is illustrated, in which the harness 14 comprises a relatively small pocket 26 for holding a smaller fluid container 11. With reference to Fig. 5 the mobile hydration system 10 according to another embodiment of the invention is illustrated, in which the harness 14 comprises a relatively large pocket 26 for holding a larger fluid container 11. The pocket 26 is arranged on the back portion 15 of the harness 14 and is arranged for containing the fluid container 11. The fluid container 11 and the portion of the drink tube 12 arranged inside the fluid container 11 are illustrated by means of dashed lines.

The pocket 26 is provided with a flap 27 for closing an opening of the pocket 26. For example, the opening of the pocket 26 is an upper opening,

so that the fluid container 11 can be inserted into the pocket 26 from above. The flap 27 is connected to the back portion 15 and is detachably fastened to the outer side of the pocket 26. For example, the flap 27 is arranged centrally in the lateral direction over the opening of the pocket 26. The flap 27 is provided with a through aperture 28 for the drink tube 12, so that the drink tube runs through the aperture 28. For example, the drink tube is fixed to the fluid container 11, wherein the fluid container 11 is arranged in a fixed position in the pocket 26 by means of the drink tube running through the aperture in the pocket flap 27.

With reference to Fig. 6 and Fig. 7 the mobile hydration system 10 according to one embodiment of the present invention is arranged on a person 29. As illustrated in Fig. 6 and Fig. 7 the shoulder straps 16, 17, the back portion 15 and the front strap 18 of the harness 14 form a closed loop for encircling the neck 30 of the person 29, so that the person 29 can put the harness 14 over his head 31 when the harness 14 is in its open position as illustrated in Fig. 2. Then, the chest strap portions 19a, 19b is fastened to each other forming a closed loop around the lower chest of the person 29. Then the front strap 18 is looped around the closed chest strap 19 and fastened, so that the harness 14 is fixed around the chest of the person while carrying the fluid container 11. For example, the harness 14 is arranged so that the shoulder straps 16, 17 join the front strap 18 in a position in front of the sternum of the person 29, wherein the front strap 18, in its closed position, is looped around the chest strap 19 at solar plexus of the person 29. Hence, the chest strap 19 surrounds the chest of the person 29, suitably, the lower part of the chest. The harness 14 is further arranged so that the pocket 26 is arranged on the upper part of the back 32 of the person 29, wherein the fluid container 11 with fluid is carried between the shoulder blades of the person 29.

For example, the pocket 26 is formed in an elastic material and will be somewhat extended when a filled fluid container 11 is inserted therein. Hence, the pocket 26 will be extended, particularly in the lateral direction, and the fluid container 11 will be put under pressure. This pressure results in that the fluid in the fluid container 11 is exposed to an increased pressure.

The increased pressure facilitates further when the user opens up the valve in the mouthpiece 13 and fluid is pushed out through the drink tube 12.

Fluid containers 11 according to the invention are suitably made of joined films of thin plastic material, which is approved for use with foodstuff. One suitable plastic material is ethylene plastic. Further, the material should be somewhat stretchable and relatively impermeable to gas or air, so that a positive pressure can be maintained during a normal period of use. The films are joined, for example by welding or heating, in a joint being circumferential except for the drink tube outlet.

The fluid system according to the invention has a wide range of applications. Except those described above in connection with sport activities the system is useful within professions having a high workload, such as for timber workers and construction workers. Other fields of application are within the medical field. By means of the fluid system, patients confined to bed can easily reach the mouthpiece and open the valve to get replenished with fluid.

CLAIMS

1. A mobile hydration system (10) comprising a flexible fluid container (11), a flexible drink tube (12), a mouthpiece (13) and a harness (14) to be carried by a person (29), wherein the drink tube (12) is provided with the mouthpiece (13) and is connected to the fluid container (11) so that a person (29) can engage the mouthpiece (13) to obtain fluid from the fluid container (11), and wherein said harness (14) comprises first and second shoulder straps (16, 17) and a back portion (15) provided with a pocket (26) holding the fluid container (11), so that a person (29) can wear the harness (14) carrying the fluid container (11) on the back (32), *characterised* in

that a first end of the first and second shoulder straps (16, 17) are connected to the back portion (15), and a second end of the first and second shoulder straps (16, 17) are connected to a single front strap (18), wherein the first and second shoulder straps (16, 17), possibly together with portions of the back portion (15) and the front strap (18), form a closed loop to be slipped over the head (31) of a person (29),

that the back portion (15) is connected to a chest strap (19) provided with a fastener (21, 22), so that the chest strap (19) can be adjustably fitted around the lower chest of a person (29), and

that the front strap (18) is provided with fastening means (23, 24), wherein the front strap (18) is arranged to be looped around the chest strap (19) and fastened, so that the harness (14) can be adjustably and snugly fitted around the chest of a person (29) wearing the system (10).

2. A mobile hydration system as claimed in claim 1, wherein the pocket (26) is arranged so that the fluid container (11) is carried between the shoulder blades of a person (29) wearing the system (10).

3. A mobile hydration system as claimed in claim 1 or 2, wherein the harness (14) is arranged so that the front strap (18) is running along the sternum and between the breasts of a person (29) wearing the system (10).

4. A mobile hydration system as claimed in any of the preceding claims, wherein the fluid in the fluid container (11) is pressurized so that the fluid is pushed out through the drink tube (12) when a valve of the mouthpiece (13) is opened.

5. A mobile hydration system as claimed in any of the preceding claims, wherein the front strap (18), in a closed position, is arranged for storing the drink tube (12) when not in use.

6. A mobile hydration system as claimed in any of the preceding claims, wherein the chest strap (19) comprises a first chest strap portion (19a) provided with a first fastener (21), and a second chest strap portion (19b) provided with a second fastener (22) for detachable and adjustable fastening to the first fastener (21).

7. A mobile hydration system as claimed in claim 6, wherein the first and second chest strap portions (19a, 19b) are arranged with free end portions when disengaged from each other.

8. A mobile hydration system as claimed in any of the preceding claims, wherein the front strap (18) is provided with first and second fastening means (23, 24) and wherein the front strap (18) is arranged with a free end portion when the first fastening means (23) is disengaged from the second fastening means (24).

9. A mobile hydration system as claimed in any of the preceding claims, wherein the pocket (26) is provided with a flap (27) having a through aperture (28) through which the drink tube (12) extends.

10. A mobile hydration system as claimed in any of the preceding claims, wherein the first shoulder strap (16) is provided with loops (25) for holding the drink tube (12) in position.

11. A mobile hydration system as claimed in any of the preceding claims, wherein the fasteners (21, 22) and fastening means (23, 24) are hook and loop fasteners.

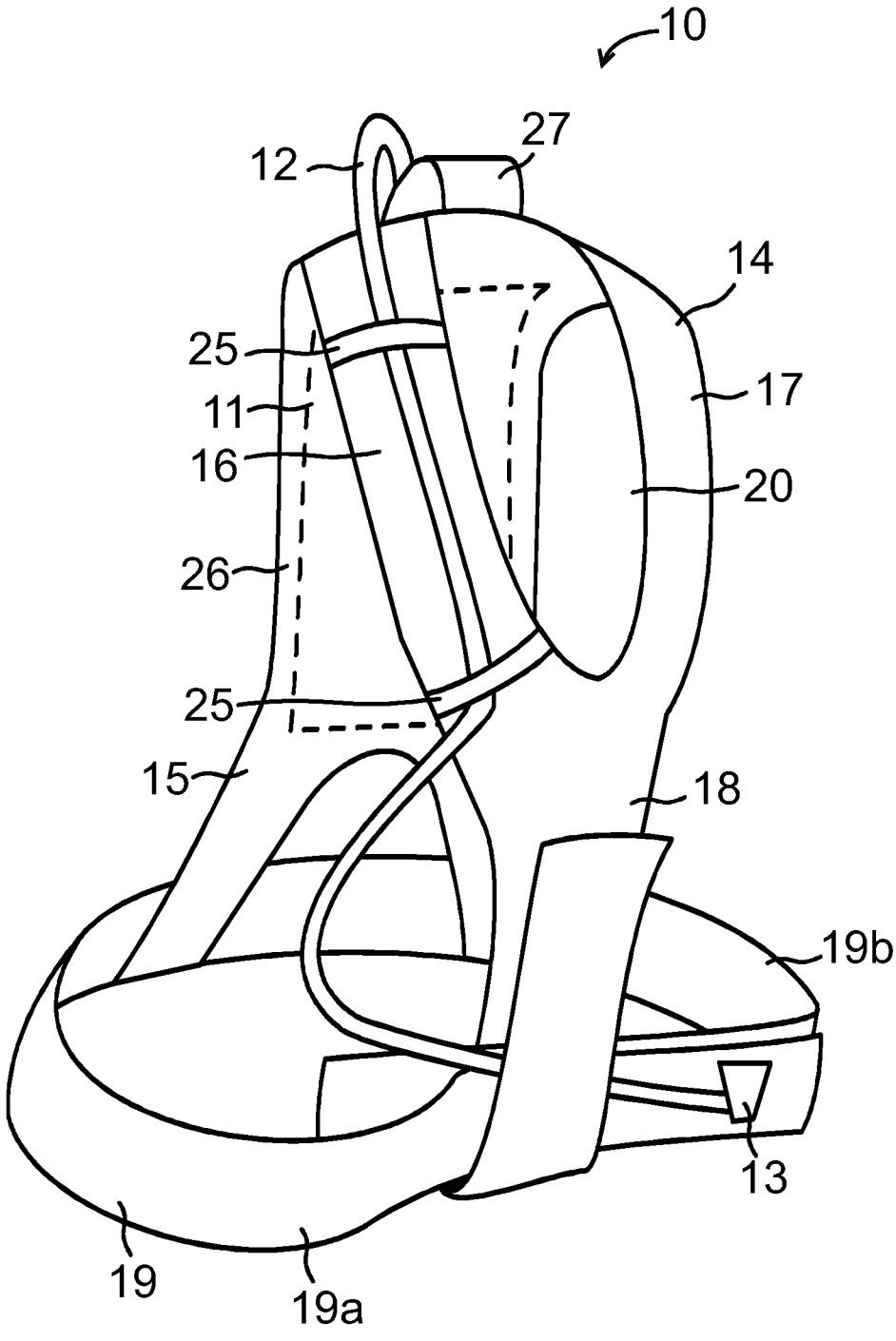


Fig. 1

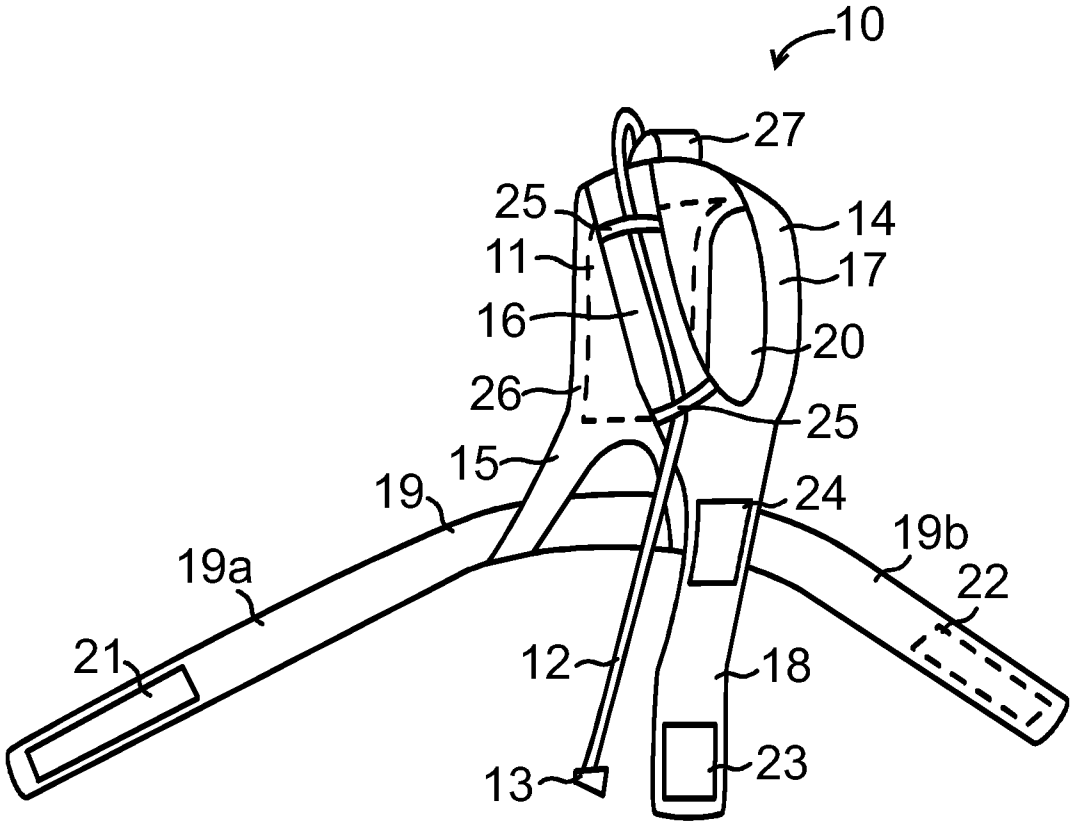

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Fig. 2

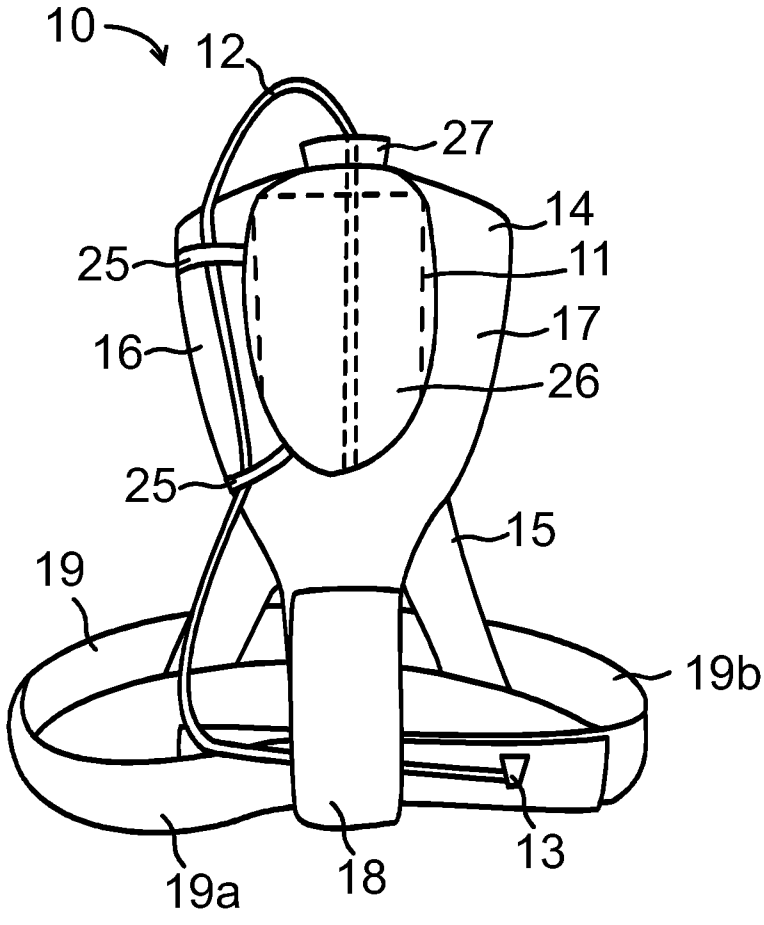

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Fig. 3

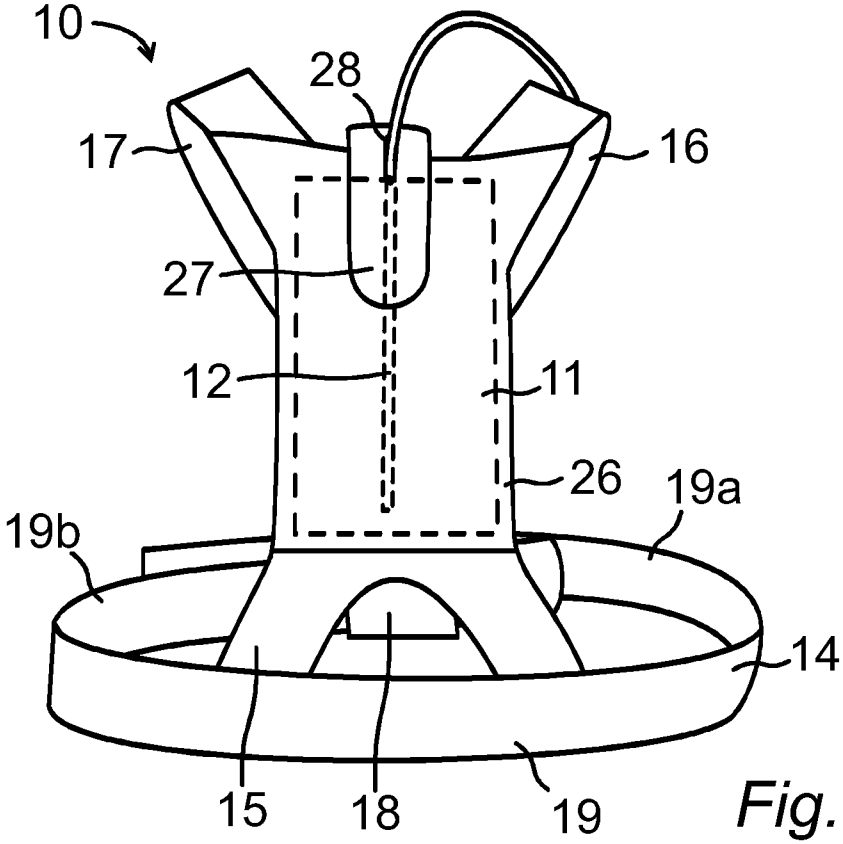

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Fig. 4

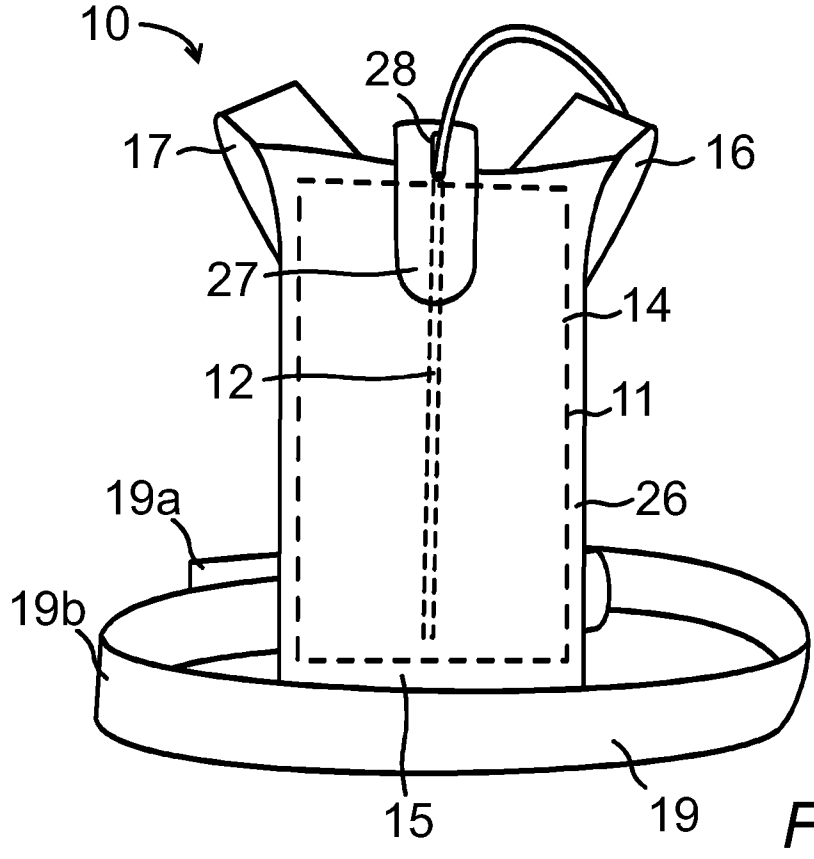

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Fig. 5

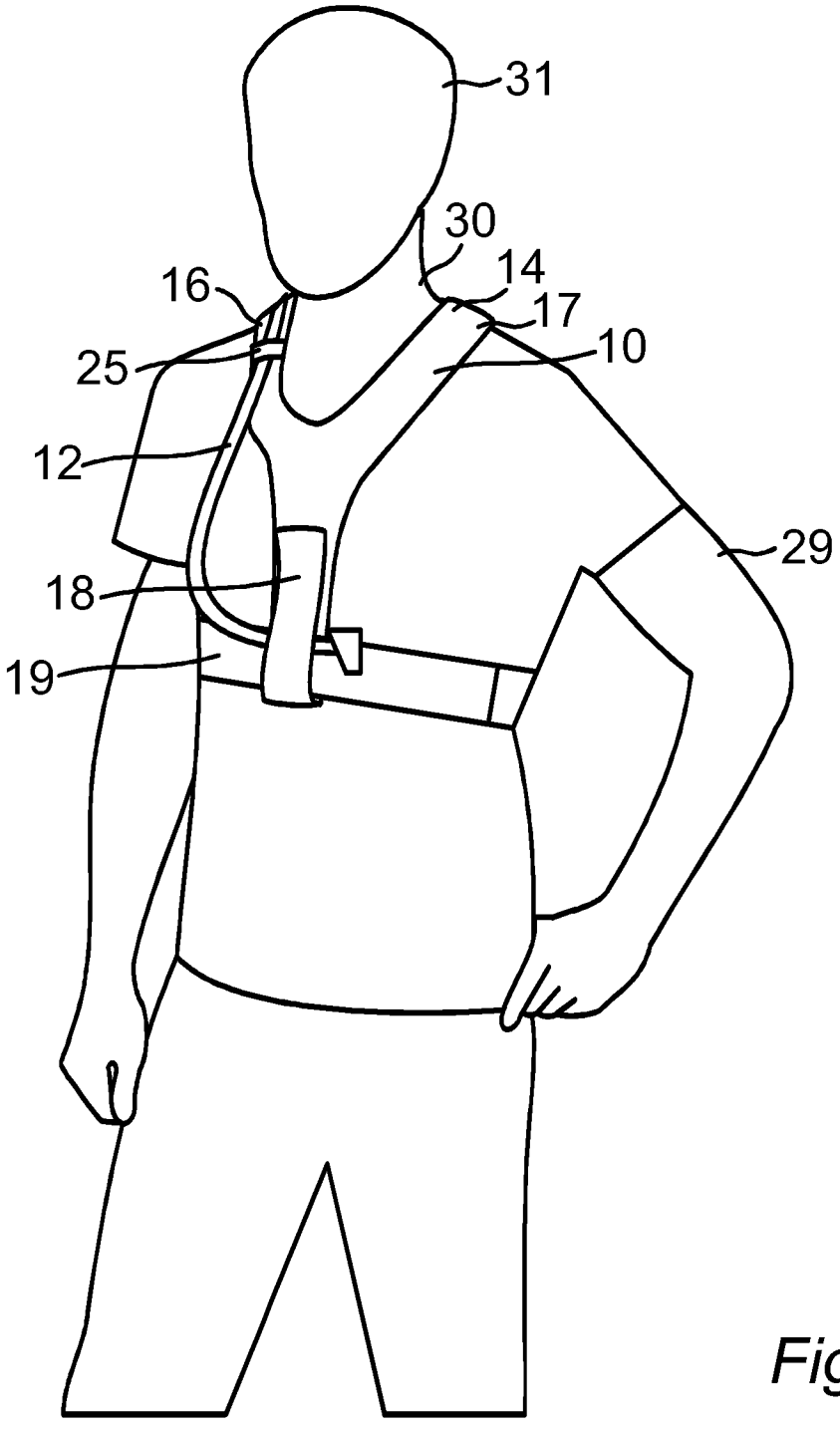


Fig. 6

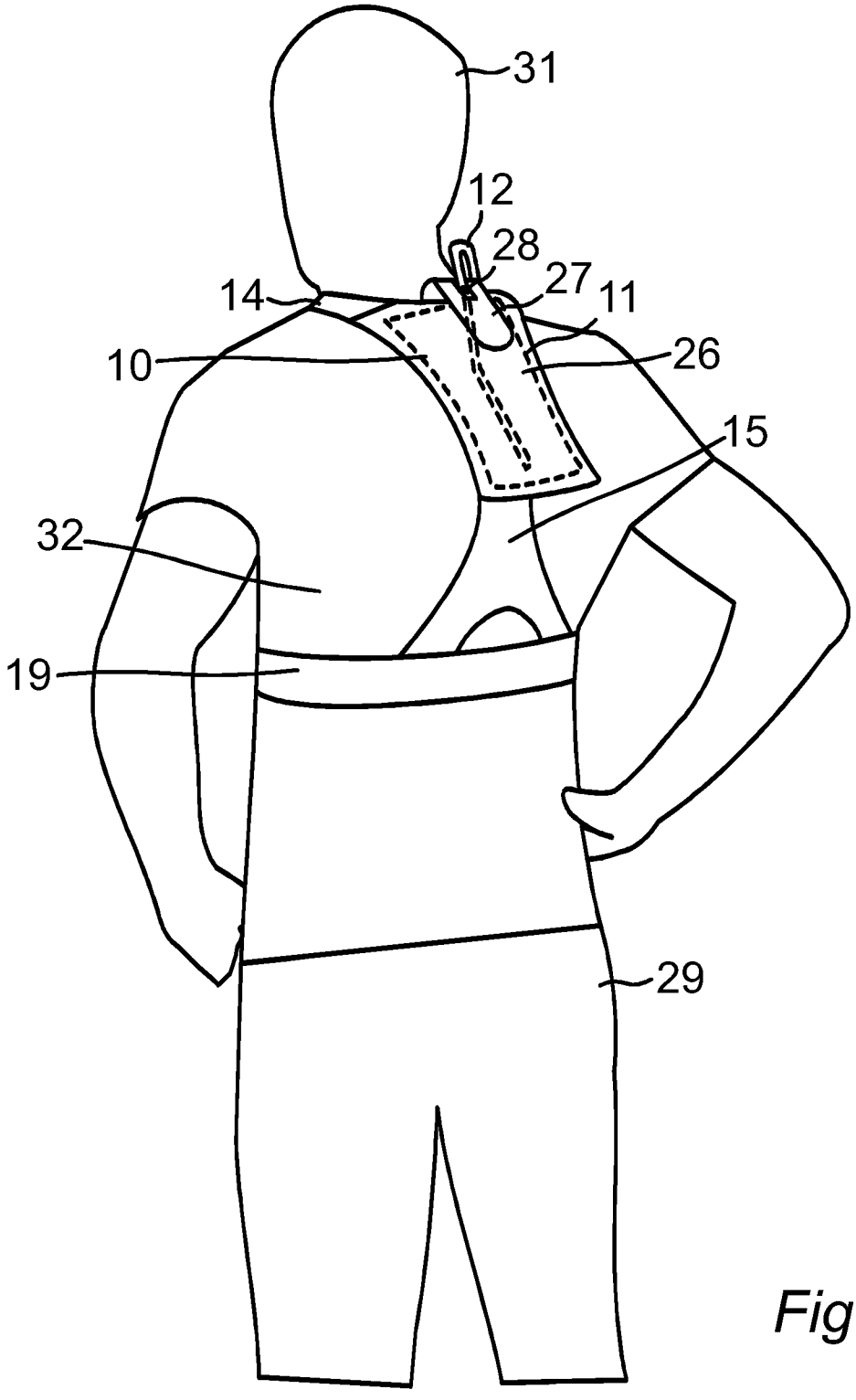


Fig. 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE2008/051574

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet
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: A45F

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

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, 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.
A	US 5427290 A (THATCHER), 27 June 1995 (27.06.1995), figure 1, abstract ---	1-11
A	US 20070012733 A1 (JORITO ET AL), 18 January 2007 (18.01.2007), figure 1, abstract ---	1-11
A	US 5911406 A (WINEFORDNER ET AL), 15 June 1999 (15.06.1999), figure 3, abstract ---	1-11
A	US 5864880 A (ADAM), 2 February 1999 (02.02.1999), figure 1, abstract --- --------	1-11

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
28 August 2009	02-09-2009
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Björn Lindkvist / JA A Telephone No. +46 8 782 25 00

International patent classification (IPC)

A45F 3/20 (2006.01)
A45F 3/04 (2006.01)

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Cited literature, if any, will be enclosed in paper form.

US	5427290	A	27/06/1995	NONE
US	20070012733	A1	18/01/2007	NONE
US	5911406	A	15/06/1999	NONE
US	5864880	A	02/02/1999	NONE