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(54) **DOG HARNESS WITH A LEASH-HOLDING ELEMENT WITH CONTROLLED DISPLACEMENT**

(57) A dog harness (1) with a leash-holding element with controlled displacement (3), developed primarily for search dogs performing special work, comprising a back strap (28), a leash-holding end element (15) fixed on it for attaching a leash, a belly strap (30) equipped with a quick release buckle, and a chest strap (29) running between the chest bone and the throat area. The leash-holding element with controlled displacement (3) has an elastic design, stretching along the axis line (27), in line with the spine of the dog to a given extent, reducing the load on the dog when led on a leash, primarily during special mantrailing - search work, when the dog is sniffing the ground with an outstretched neck. The leash-holding

element with controlled displacement (3) comprises an elastic portion (8) and a loop portion (9) limiting the stretching of the elastic portion, and a loop (16) holding a leash-holding end element (15), which move on the axis line (27), at least partially through an opening formed between a strip limiting cover element (4) and a saddle part (26) and/or underlay (25), as a function of the forces acting on the leash-holding end element (15). Thereby the leash-holding element (15) follows the mechanism of movement characteristic of search work, and allows smooth working for the search dog led on a leash. The invention can be applied to several types of dog harnesses.

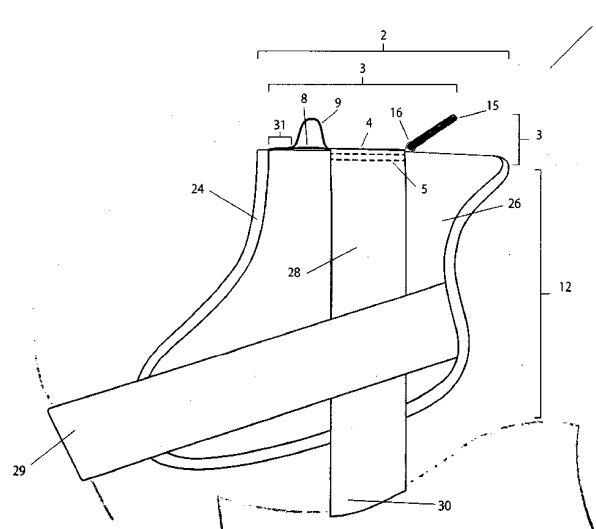


Figure 1

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## Description

**[0001]** The invention is a dog harness with a leash-holding element with controlled displacement, developed primarily for search dogs performing special work, comprising a back strap, a leash ring fixed on it for attaching a leash, a belly strap equipped with a quick release buckle, and a chest strap running between the chest bone and the throat area. The leash-holding element with controlled displacement has an elastic design, stretching along the axis line, in line with the spine of the dog to a given extent, reducing the load on the dog when led on a leash, primarily during special mantrailing - search work, when the dog is sniffing the ground with an out-stretched neck. The leash-holding element with controlled displacement comprises an elastic portion and a loop portion limiting the stretching of the elastic portion, and a loop holding a leash-holding end element, which move in the direction of the axis line, at least partially through an opening formed between a strip limiting cover element and a saddle part and/or underlay, as a function of the forces acting on the leash-holding end element. Thereby the leash-holding element follows the mechanism of movement characteristic of search work, and allows smooth working for the search dog led on a leash. The invention can be applied to several types of dog harnesses.

**[0002]** Dog harnesses have been developed against the historical background of harnesses designed for horses. The aim of both horse harnesses and dog harnesses was to reduce the impacts acting on the body of the animal as a result of the pulling force.

**[0003]** In chest harnesses a chest strap connects the two shoulder joints of the animal horizontally on the chest of the animal between the neck and the chest bone. In the case of this type of harness, the load acts on the chest of the animal, thereby allowing it to pull larger weights. The spread of chest harnesses in Europe is attributable to peoples of inner-Asian origin - the Avars, the Huns, and the Hungarians.

With the relegation of pulling or driving horses to the background, chest harnesses were further developed primarily for dogs, as they provide an ideal solution for leading a dog on a leash, holding it back, and for distributing the pressure caused by the acting forces.

The dog chest harnesses found in the prior art comprise leather and/or textile straps, padded on the back part, chest part and belly part of the dog with an underlay in a fixed, or sometimes in a releasable manner. Dog chest harnesses padded on the back part of the dog, shaped like a horse saddle, are also called "saddle-harnesses". In this case the padded saddle part or underlay rests on the back of the dog, covering it like a saddle. The purpose of padding is to stabilize the straps, and to allow the attachment, display of additional equipment (e.g. bag, light, GPS or camera devices) and/or graphic elements, high visibility colours, labels on the padding itself, or on the cover thereof. Due to the saddle part, such addition

equipment does not come into contact with, and does not irritate the back of the dog. In Europe the most common dog chest harness design is a Hungarian development, the K9 "Powerharness" from 1997, which was introduced first for Austrian, then for German service dog units (DE302009060989).

**[0004]** Another type of pulling harness is the collar and hames harness. While in the Carpathian Basin the use of chest harnesses was common, in the Western cultures typically collar and hames harnesses were used for horses. The collar and hames harnesses put the load mainly on the shoulder of the animal, which is an advantageous solution for load distribution and for using the pulling power of the animal. These harnesses also served as a basis for the development of dog harnesses.

Mantrailing (search dog) harnesses developed for special use, following the design of collar and hames harnesses, are not particularly suitable for everyday use, for example, because the leash ring is located on the back of the dog in line with the stomach in order to ensure that the dog is not disturbed by the leash during work. During search work, with its nose on the ground, the dog performs a special movement for an extended period of time, during which it must follow a trail with maximum concentration. During search work, while moving fast, with its body stretched out and its nose on the ground, the dog assumes a very different body posture than the normal body posture during walks. During search the leash runs almost in line with the back of the dog, at a small angle with it, as the dog works with its nose on the ground. The dog can be disturbed in its work by every unintended move of the leash, every displacement, or any elastic contraction of the dog harness. The active search work of a dog is very limited in time. A favourable dog harness design can help a lot in making the mantrailing work successful, therefore it is expedient to develop it further.

**[0005]** Search dogs, who during their work strain every nerve to concentrate on following the person or object to be found, should be spared from impacts caused by the tugging of the leash.

Dog harnesses of an elastic design often include elastic portions, but only to make them comfortable and form fitting. They can be of help when lifting the dog, but they are impractical to use in the case of search dogs.

**[0006]** Patent No. US2007/0034164A1 discloses an invention where on the chest part of an elastic harness the continuity of the load-bearing (non-elastic) straps is interrupted by an elastic insert.

**[0007]** The dog harness of Zimmerman (US 2007/0044735) has been developed for special use. This reference, however, refers only in general to the use of elastic straps, for added comfort, providing a form-fitting and comfortable design.

The references listed above are not suitable for the long-term elastic compensation of the forces acting when leading the dog on a leash, rather, they serve special purposes.

**[0008]** The biggest disadvantage of the references is

that no element covering the elastic elements, limiting their stretching is provided for the dog harness, to perform a load-bearing function, and to limit the stretching of the elastic portions, relieving them and preventing their overloading. The elastic elements are also load-bearing elements. Elastic design is incorporated only as a general function arising obviously from elasticity. Therefore the permanent, deforming stretching of the elastic portion is inevitable, and its breaking can be avoided only by using oversized, excessively thick elastic elements.

The long-term safe use of the stretching elements is of primary importance, and it is possible only if the stretching of the elastic structural elements is limited by a separate structural portion.

**[0009]** The prior art closest to this invention is a further developed version of a dog chest harness, the K9 Powerharness. The chest harness with an elastic chest strap of the prior art goes beyond providing comfort, which would obviously result from an elastic design. The harness disclosed in Patent No. P1400100 comprises an elastic portion on both parts of the chest strap running horizontally, surrounding the chest of the animal. An aim of that invention was to implement an elastic chest harness that is suitable for securing four-legged animals, primarily dogs e.g. in a car, and at the same time is also of assistance during everyday walks. A chest strap of an elastic design and/or a design capable of elastic, dimensionally stable stretching over a given section, protecting the shoulder joints by limiting the stretching, absorbing the micro-vibrations, is advantageous primarily for leading the dog on a leash on a daily basis.

Still another aim was to make the chest harness also suitable for other mammals kept as a pet (rabbits, cats), with a different chest anatomy from that of dogs, by making the elastic chest strap always close fitting during movement, retracting after each jump or step. The reference comprises an elastic portion on both parts of the chest strap, with an element limiting the stretching thereof, ensuring that the joints are spared during use.

A disadvantage of the reference is that the developed elastic portion and the element limiting the stretching thereof cannot be transferred to the line of a leash-holding end element, because the elastic portion cannot withstand, in the long term, forces acting directly, from varying directions, furthermore, the abrasion resistance of elastic materials combined with textiles is far below that of straps generally used for harnesses. Thereby the leash-holding end element could damage the surface of the elastic portion. When leading the dog on a leash, the whole back part of the dog harness could be displaced, and that could disturb the dog. Another disadvantage is that the leash is attached to a leash ring at a distance from the adjustable-length chest strap, thereby when the leash is pulled, the animal can be certainly expected to feel the displacement of the leash and/or the elastic portion, or the whole dog harness at least on its back and chest. Moreover, the elastic design in this form, as a function of the materials used, can lead to undesirable electrical charge build-

up.

A further disadvantage of the invention is that the chest strap stretches the elastic portion by its own weight, especially in the vertical direction. A chest strap sliding down towards the legs of the dog due to an uneven load can hinder the movement of the animal. Furthermore, the fastener ring can turn out as a result of the loads, as the fastener ring is not held tightly by the load-bearing strap on the side towards the saddle part. This can lead to the fastener/adjuster ring holding the chest strap turning with its narrower side into the horizontal direction and wrinkling the chest strap. The element limiting the stretching of the elastic portion is a loose loop, which allows the displacement or turning out of the ring.

Yet another disadvantage is that the production process is complicated, as the extent of stretching on the two parts, opposite sides of the adjustable-length chest strap needs to be harmonized. The extent of stretching should be the same on both sides of the dog harness (that is the two parts of the chest strap), otherwise the harness can turn on the body of the mammal, moreover, the animal can even get loose from it.

**[0010]** In general it can be stated that the prior art includes no dog harness in which the elastic design, the movement, friction of the dog harness as a whole, or elements thereof, does not have an undesirable physical effect perceptible to the search dog doing its work.

In general it can be stated that in the prior art the elastic portions or the elements limiting their stretching come into contact with the body of the dog at least partially, or are designed as structural elastic elements surrounding the body of the dog, or moving on the body of the dog, thereby their movement can irritate the dog.

The prior art does not include a chest or collar and harness developed for search dogs that would solve the above problems, and would thereby make the work of search dogs smooth.

An aim of this invention is to eliminate the above disadvantages in full, and to implement a leash-holding element with controlled displacement in line with the spine of the dog. The device should be implemented in such a way that its operation is not perceptible to the dog when led on a leash, and no physical impact is felt by especially a search dog, with its body constantly stretched out and its nose on the ground, that would distract it from following a trail. Nevertheless, elastic portion(s) need to be incorporated into the dog harness, in combination with a leash-holding end element, and the extent of stretching should be limited. An aim of this invention is to incorporate an elastic portion with limited stretching, with an element limiting the stretching thereof, directly at a leash-holding end element, at the leash ring (end element) holding the leash, in a manner touching the back strap of the dog harness, to ensure that during the work of search dogs the forces acting through the leash are compensated as soon as possible, at the moment of reaching the dog harness.

Another aim is to dampen the micro-vibrations caused

by leading on a leash directly at the element holding the central ring, and to ensure that, due to the special design, the back part of the harness or the other straps surrounding the dog are not displaced by the acting forces, or that the back or chest of the dog is not irritated by the displacement of the dog harness.

Another aim is to ensure that, in spite of this, the leash-holding end element (ring) performs its function, that is it withstands several times the weight of the dog in the event of unexpected forces, irrespective of the direction in which the forces act.

Another aim is to ensure that the leash-holding end element of the leash-holding element with controlled displacement and the loop holding it can move in a direction parallel to the spine of the dog, but in the event of forces acting at any other angle on the spine, their movement is confined to between the fixing zones of a cover element, running parallel to the axis line, and the back part of the dog harness.

Another aim is to provide at least one lining/underlay on the back part of the dog harness, wider than the elastic portion and the loop portion limiting the stretching of the elastic portion, for positioning the leash-holding element with controlled displacement, and for separating it from the body of the dog. An aim of the underlay(s) - in addition to those known in the prior art - is not only to ensure that the elastic portion or the loop portion limiting the stretching of the elastic portion does not come into direct contact with the body of the dog, but also to absorb, dampen the friction caused by the elastic operation and the forces wrinkling the saddle part. The main aim of the underlay is to stiffen the back part of the dog harness in the direction of the stretching of the elastic portion, which could otherwise be creased, wrinkled by the operation of the elastic portion. Another aim can be to incorporate multiple layers of underlays of different physical properties, which in part can be formed from the saddle part, in the continuation thereof, on the side towards the elastic portion.

Another aim is to make the loop portion limiting the stretching of the elastic portion form a protrusion on the spine of the dog, extending away from the body of the dog, which protrusion, due to the lining/underlays and/or the saddle part, will not come into contact with the back of the dog. Another aim is to completely prevent the protrusion from getting caught up on landmarks by forming a closed loop perpendicularly to the spine and the direction of movement (that is the axis line). Upon the stretching of the elastic portion, the protrusion should rest flat on the lining/underlay and/or the elastic portion in such a way that the elastic operation is imperceptible to the dog.

Another aim is to design the fixing zones, and the length of the elastic portion and the length of the loop portion limiting the stretching of the elastic portion (extent of protrusion) so as to ensure that the elastic portion can withstand, in the long term, stretching to the length of the fully straightened loop portion limiting the stretching thereof without wearing out, but the loop holding the leash-hold-

ing end element should not reach the edging element bordering the saddle part, because a contact could damage both the edging element and the loop holding the leash-holding end element.

5 Still another aim is to form a neck leash-holding element suitable for attaching a leash on the dog harness, on a neck extension thereof, which is not elastic, and allows safe leading on a leash. This should be formed closer to the neck of the dog, in line with its forelegs, in order to  
10 ensure that in the case of an emergency leading on a leash is as safe as possible. Yet another aim is to cover this element in a releasable manner in order to prevent it from getting caught up.

**[0011]** Thus, one task is to develop a dog harness with  
15 a leash-holding element with controlled displacement in such a way that an elastic portion and a loop portion limiting the stretching thereof are in line with a leash-holding end element (ring), connected to an underlay formed from a saddle part, in the continuation thereof, or  
20 as a separate structural element on the saddle part, and a strip limiting cover element. The width of the underlay on both sides of the axis line should be determined by the fixing zone of the strip limiting cover element. The fixing zone of the strip limiting cover element should preferably separate from each other the side portion of the  
25 back part and the underlay.

Another task is to make durable the structure holding the leash-holding element and primarily the elastic portion, moving in the direction of the axis, and to appropriately  
30 limit its elasticity, movement in spite of the fact that this is the point on which the greatest, concentrated force acts when leading the dog on a leash.

Another task is to limit, or prevent the movement of the elastic portion in the direction perpendicular to the axis  
35 line by a separate strip limiting cover element and its strip limiting cover element fixing zones parallel to the axis line, along the whole length thereof.

The length of the elastic portion and the loop portion limiting the stretching of the elastic portion is limited by fixing  
40 zones.

Another task is to ensure that the loop portion limiting the stretching of the elastic portion extends beyond the elastic portion in the direction perpendicular to the axis line, and to form the loop portion fixing zone in the strip portion  
45 extending beyond the elastic portion, in a manner not touching the elastic portion. Thereby the length of the elastic portion measured in the rest state can be increased, due to which the load on the elastic portion is reduced, ensuring a long-term utility value. Over this particular section the elastic portion should move, stretch  
50 freely along the axis line of the dog harness. Therefore, the fixing zones of the elastic portion and the fixing zones of the element limiting the stretching of the elastic portion should at least partially differ from each other in terms of design and position.

Yet another task is to have an additional neck leash-holding element, leash ring, located on the dog harness in the continuation of the loop portion limiting the stretching

of the elastic portion, in a manner not affecting the stretching of the elastic portion. This makes the dog harness suitable for street use or use in the case of an emergency, where the elastic design performing the tasks described above is not needed.

**[0012]** Thus, the invention relates to a dog harness with a leash-holding element with controlled displacement, having a leash-holding element with controlled displacement formed on the dog harness, which comprises a back part, a back strap connected thereto and a leash-holding end element included in a loop holding the leash-holding end element, furthermore a chest part and/or neck strap, and a belly strap connected to the back part, furthermore an elastic portion, and furthermore the stretching of the dog harness as a function of the forces acting when leading the dog on a leash is controlled by at least one loop portion limiting the stretching of the elastic portion of the dog harness.

The essence of the invention is that the leash-holding element with controlled displacement, arranged symmetrically on the back part of the dog harness, on the axis line, on both sides of the axis line, comprises a leash-holding end element, a loop holding the leash-holding end element, an underlay lining it at least partially, at least one elastic portion resting flat thereon and a loop portion limiting the stretching of the elastic portion, protruding from the back part, traversable perpendicularly to the axis line, forming an open loop, and separated from the leash-holding end element by a strip limiting cover element, furthermore the underlay and the strip limiting cover element extend beyond the loop portion limiting the stretching of the elastic portion in the direction perpendicular to the axis line, on both sides of the axis line, and are fixed together on both sides of the axis line in a strip limiting cover element fixing zone, forming a traversable opening open in the direction of the axis line, resting flat on the back part, and thereby, as a function of the forces acting through the leash-holding end element, the elastic portion and the loop portion limiting the stretching of the elastic portion at least partially intrude between the strip limiting cover element, the underlay and the strip limiting cover element fixing zones.

**[0013]** A further essence of the invention is that the movement of the elastic portion and the loop portion limiting the stretching of the elastic portion in any direction other than parallel to the axis line is tightly limited on both sides of the axis line by the strip limiting cover element and the strip limiting cover element fixing zones.

**[0014]** Preferably, the distance between the elastic portion fixing zone and the elastic portion fixing zone towards the end element on the same side of the axis line of the leash-holding element with controlled displacement is larger than the distance between the fixing zone towards the holding loop and the loop portion fixing zone. Preferably, at least the end of the underlay towards the leash-holding end element ends under an edging element.

Preferably, the underlay is formed at least partially from

the saddle part, in the continuation thereof.

Preferably, the strip limiting cover element ends under the edging element on both sides of the axis line.

**[0015]** Most preferably, the side portion hook and loop fastener component ends under the strip limiting cover element.

Preferably, the displacement of the loop holding the leash-holding end element, controlled by the loop portion limiting the stretching of the elastic portion, is confined to between the strip limiting cover element and the edging element.

Most preferably, the strip limiting cover element is perpendicular to the leash-holding element with controlled displacement.

Preferably, the leash-holding element with controlled displacement has an extension holding element at the strip portion opposite to the leash-holding end element, connecting the back part and a neck extension of the leash-holding element on the axis line.

Most preferably, the neck extension of the leash-holding element has at least one neck leash-holding element on the axis line.

Preferably, the neck leash-holding element has a closing element, which can close the neck leash-holding element flat on the neck extension of the leash-holding element. Preferably, there is a cover element corner fixing element at the point of the strip limiting cover element fixing zone closest to the leash-holding end element on both sides of the axis line, arranged symmetrically.

**[0016]** The dog harness with a leash-holding element with controlled displacement according to the invention is shown in the following figures:

Figure 1: A side view of a dog chest harness, with a strip limiting cover element formed from a back strap, with strip limiting cover element fixing zones fixing it and, according to a most preferred embodiment, a loop portion limiting the stretching of an elastic portion, protruding vertically.

Figure 2: A top view of the connection of a back part, a neck extension of a leash-holding element and a lower chest lining element to each other on a collar and hames style search dog harness, with other associated elements and a leash-holding element with controlled displacement on the back part, with parts thereof shown in local cross-sections.

Figure 3: A side view of a search dog harness comprising three main parts connected in a releasable manner, with a leash-holding element with controlled displacement on the saddle part of the back part, and the parts thereof.

**[0017]** Figure 1 shows a side view of a dog chest harness on a dog, comprising a back part 2 resting on the back of the dog, lined at least partially by a saddle part 26 to prevent the individual fastener elements from coming into direct contact with the back of the dog. In the most preferred embodiment the foam padded saddle part

26 lines the back strap 28 of the back part 2 and at least partially the chest part 29. The back part 2 of the dog harness 1 has a side portion 12 extending vertically from the leash-holding element with controlled displacement 3 on both sides of the dog. The side portion 12 is bordered by a strip limiting cover element fixing zone 5 and an edging element 24. The back strap 28 and the chest part 29 located at least partially on the side portion 12 do not come into direct contact with the body of the dog, because they are lined at least partially by the saddle part 26. The saddle part 26, at least on the side towards the dog, is made of a skin-friendly material, preferably cotton. The underlay 25 shown in Figure 2, in the embodiment shown in Figure 1, is formed from the saddle part 26, in the continuation thereof. The saddle part 26, at least to the extent of the leash-holding element with controlled displacement 3, is thicker, reinforced to offset any wrinkling on the saddle part 26 resulting from elastic operation. A belly strap 30 extends from the back part 2, ending in the back strap 28 on the side portion 12 of the back part 2. In a preferred embodiment of the chest harness, the back strap 28 extends up to the strip limiting cover element fixing zone 5, then a strip limiting cover element 4 is formed from the back strap 28, in the continuation thereof, forming a traversable opening. The saddle part 26 is bordered by an edging element 24. The leash-holding element with controlled displacement 3 is formed on the back part 2 of the saddle part 26, comprising a loop portion limiting the stretching of the elastic portion 9 and an elastic portion 8 sliding under the strip limiting cover element 4, separated from a leash-holding end element 15 and a loop holding the leash-holding end element 16 by the strip limiting cover element 4. The loop portion limiting the stretching of the elastic portion 9 is a bulging part formed preferably from a strap, traversable in the direction of the back strap 28, which rests flat on the elastic portion 8 when it stretches as a result of the forces acting when leading the dog on a leash. The leash-holding element with controlled displacement 3 is held by the edging element 24 at least at the strip portion opposite to the leash-holding end element 31.

The strip limiting cover element fixing zone 5 crosses the back strap 28 on the back part 2, and separates it from the strip limiting cover element 4. Preferably, the strip limiting cover element 4 is formed from the back strap 28, in the continuation thereof. The strip limiting cover element 4 separates the leash-holding end element 15 and the strip portion opposite to the leash-holding end element 31 from each other, forming a traversable flat loop between them.

**[0018]** Figure 2 shows a top view of a search dog harness 1 made for special use in an outspread position, while Figure 3 shows a side view thereof, in a preferred embodiment comprising a back part 2, a neck extension of the leash-holding element 17 and a chest lining element 21, and a neck strap 20 and a belly strap 30 connected thereto, as its main parts. The back part 2 comprises two side portions 12 hanging down on both sides

of the dog, and a saddle part 26 preferably lining 100% of the whole back part 2, to which straps surrounding the waist of the dog are attached in a fixed manner. The back part 2 has a back part fastener element 23, connecting to the belly strap 30 and partially lined by the saddle part 26 of the back part 2.

The side portion 12 is bordered by the leash-holding element with controlled displacement 3 and the underlay 25 thereof, as well as the edging element 24. The side portion 12 is preferably a padded element. The underlay 25 can be a separate strap, a reinforcement fixed on the saddle part 26, or it can be formed by the saddle part 26 itself, as shown in Figure 1.

In a preferred embodiment, the leash-holding element with controlled displacement 3 is formed on the side portions 12 of the back part 2, connecting to the back strap 28 at the connection of a side portion hook and loop fastener component 13 and the strip limiting cover element 4 attached thereon, arranged symmetrically on both sides of the axis line 27 shown in Figure 2. The strip limiting cover element 4 extends into the side portions 12 on both sides of the axis line 27 shown in Figure 2, most preferably ending under the edging element 24.

The leash-holding element with controlled displacement 3 comprises a leash-holding end element 15, a loop holding the leash-holding end element 16 holding it, a strip limiting cover element 4 pressing it down along the line of a fixing zone towards the holding loop 6 shown in Figure 2, fixed by strip limiting cover element fixing zones 5 to the back part 2 of the dog harness 1 and at the same time to the underlay 25 on both sides of the axis line 27 shown in Figure 2, an elastic portion fixing zone towards the end element 7 shown in a local cross section in Figure 2, covered at least partially by the strip limiting cover element 4, an underlay 25 at least partially enclosing, together with the strip limiting cover element 4, the loop holding the leash-holding end element 16 and/or the elastic portion 8, a loop portion limiting the stretching of the elastic portion 9, open in both directions perpendicularly to the axis line 27 shown in Figure 2, an elastic portion 8 shown in a local cross section, and a loop portion fixing zone 11 shown in Figure 2 and an elastic portion fixing zone 10 shown in Figure 2, formed in a strip portion opposite to the leash-holding end element 31 in the continuation of the loop portion limiting the stretching of the elastic portion 9 and the elastic portion 8.

**[0019]** Preferably, the loop portion fixing zone 11 shown in Figure 2 is closer to the loop portion limiting the stretching of the elastic portion 9 than the elastic portion fixing zone 10 shown in Figure 2. Thereby the length of the elastic portion 8 can be longer than the total length of the loop portion limiting the stretching of the elastic portion 9. The section of the elastic portion 8 free from fixing zones, capable of stretching, is determined by the distance between the elastic portion fixing zone towards the end element 7 shown in Figure 2 and the elastic portion fixing zone 10 shown in Figure 2. Figure 2 shows the preferable distance between the elastic portion fixing

zone towards the end element 7 and the elastic portion fixing zone 10 compared to the length of the loop portion limiting the stretching of the elastic portion 9. This has a decisive influence on the service life of the elastic portion 8 and also the operation of the leash-holding element with controlled displacement 3, because the overloading of the elastic portion 8 can be prevented.

Figure 2 shows the preferable distance between the elastic portion fixing zone towards the end element and the elastic portion fixing zone compared to the length of the loop portion limiting the stretching of the elastic portion, which is longer by the extent of the protrusion.

Figure 2 shows in a local cross section that the loop portion limiting the stretching of the elastic portion 9 is wider than the elastic portion 8 in the direction perpendicular to the axis line 27 - protecting it from UV radiation -, and that the loop portion limiting the stretching of the elastic portion 9 has an open design in the direction perpendicular to the axis line 27.

Most preferably, the loop portion limiting the stretching of the elastic portion 9 of Figures 2 and 3 is formed from the loop holding the leash-holding end element 16, in the continuation thereof, and protrudes from the back part 2 of the dog harness 1. In a most preferred embodiment, the loop holding the leash-holding end element 16 and the strip limiting cover element 4 are textile straps of the same weaving density, structure and material. In the event of maximum force acting on the leash-holding end element 15, the loop portion limiting the stretching of the elastic portion 9 and the stretching elastic portion 8 are resting flat on each other. The loop portion limiting the stretching of the elastic portion 9 and the elastic portion 8 are designed to slide under the strip limiting cover element 4 as a function of the acting forces, as the leash-holding element with controlled displacement 3 is fixed together with the back part 2 in a fixed manner only at the strip portion opposite to the leash-holding end element 31, by sewing and/or riveting.

**[0020]** Preferably, the strip portion opposite to the leash-holding end element 31 is lined by the saddle part 26 and the underlay 25, fixed together with them in a fixed manner, by sewing.

The leash-holding element with controlled displacement 3, with the exception of the strip portion opposite to the leash-holding end element 31 and the strip limiting cover element 4, moves in a direction parallel to the axis line 27 shown in Figure 2 as a function of the forces acting on the leash-holding end element 15.

The loop holding the leash-holding end element 16 moves in a direction parallel to the axis line 27 shown in Figure 2 as a function of the pulling forces acting on the leash-holding end element 15, to the extent of the length of the loop portion limiting the stretching of the elastic portion 9, moving between the underlay 25 and the strip limiting cover element 4. In the event of maximum load acting on the leash-holding end element 15, the loop portion limiting the stretching of the elastic portion 9, protruding from the back part 2 and the leash-holding ele-

ment with controlled displacement 3, and the elastic portion 8 are resting flat on each other, and the loop portion limiting the stretching of the elastic portion 9 intrudes between the underlay 25 and/or the saddle part 26 and the strip limiting cover element 4.

**[0021]** On a dog harness 1 designed for search dogs, the strip limiting cover element 4 is a separate structural element preferably closing an angle of 25- 85 degrees with the back strap 28.

10 Most preferably, the strip limiting cover element 4 is perpendicular to the axis line 27 shown in Figure 2, and is fixed together with the underlay 25 and/or the saddle part 26 in the strip limiting cover element fixing zone 5 on both sides of the axis line 27 shown in Figure 2. The underlay 25 lines at least the meeting point of the strip limiting cover element 4 and the loop holding the leash-holding end element 16, over the full width of the strip limiting cover element 4 measured in the direction of the axis line 27.

20 The underlay 25 is covered by the edging element 24 of the saddle part 26 on both sides of the axis line 27. The underlay 25 extends beyond the width of the loop holding the leash-holding end element 16 by at least 10 millimetres in the direction perpendicular to the axis line 27 shown in Figure 2.

25 Preferably, the side portion 12 extends up to the strip limiting cover element fixing zone 5 of the leash-holding element with controlled displacement 3, and preferably continues in the underlay 25 and/or extends under it. The underlay 25 can be the saddle part 26 itself, or the saddle part 26 can include additional internal reinforcements.

30 **[0022]** Preferably, the leash-holding element with controlled displacement 3 and the strip limiting cover element 4, as well as the underlay 25, are textile straps of the same material and surface, with high abrasion resistance. The width of the strip limiting cover element 4 measured perpendicularly to the axis line 27 shown in Figure 2 is larger than the width of the loop portion limiting the stretching of the elastic portion 9 and the loop holding the leash-holding end element 16 measured perpendicularly to the axis line 27 shown in Figure 2.

35 There is a cover element corner fixing element 5a shown in Figure 2 at the point of the strip limiting cover element fixing zone 5 closest to the leash-holding end element 15 on both sides of the axis line 27 shown in Figure 2, arranged symmetrically, which is preferably a rivet or zig-zag sewing.

40 There is at least one back part fastener element 23 on the back part 2, ending in a belly strap 30 surrounding the belly of the dog as shown in Figure 3.

45 A side portion hook and loop fastener component 13 is arranged symmetrically on the back part 2, on the back strap 28 on both sides of the axis line 27 shown in Figure 2. The side portion hook and loop fastener component 13 serves for displaying graphic elements, and one end thereof ends under the strip limiting cover element 4, while the other ends freely in the direction of the back part fastener element 23.

The leash-holding element with controlled displacement 3, in the strip portion opposite to the leash-holding end element 31, ends in an extension holding element 18 shown in Figure 2, from which a neck extension of the leash-holding element 17 starts.

The neck extension of the leash-holding element 17 is connected to the back part 2 by the extension holding element 18 shown in Figure 2. Preferably, the length of the neck extension of the leash-holding element 17 is adjustable by a back part slide adjuster 19, or it can be released/adjusted by an extension fastener element 18a shown in Figures 2 and 3. A neck strap 20 surrounds the neck of the dog on both sides, and is lined at least partially by a neck padding portion 32 partially extending under the neck fastener elements 22. The neck strap 20 surrounds the chest of the dog from below, and ends in a chest lining element 21. The neck strap 20 has a slide adjuster 20a for adjusting its length.

Preferably, the back part 2, the neck extension of the leash-holding element 17 and the chest lining element 21 are designed to be connected to each other in a releasable manner.

Preferably, the neck extension of the leash-holding element 17 has a neck leash-holding element 14 on the axis line 27 shown in Figure 2, which can be closed on the neck extension of the leash-holding element 17 by a closing element 14a, to prevent it from getting caught up. The neck extension of the leash-holding element 17 is partially bordered by an edging element 24. The extension fastener element 18a has a neck padding portion 32 on the side towards the body of the dog.

**[0023]** The dog harness with a leash-holding element with controlled displacement provides a clearly perceptible improvement in comfort to search dogs when led on a leash, going far beyond the elastic dog harnesses found in the prior art. The invention ensures primarily in the case of dogs working in a special field, as search dogs, that the forces arising from the special movement of the dog during work are absorbed in an imperceptible manner, and allows smooth working for the dog.

The invention eliminates the form fitting design characteristic of elastic dog harnesses, the friction on the body of the dog, or the contact with the elastic parts, because the elastic portion is incorporated on the axis line, lined by an underlay and/or a saddle part. The forces acting on the dog harness are absorbed by the leash-holding element with controlled displacement already at the leash-holding end element, thereby greatly supporting the dog in concentrating on the search work.

List of reference numbers

**[0024]**

1. dog harness
2. back part
3. leash-holding element with controlled displacement

4. strip limiting cover element
5. strip limiting cover element fixing zone
- 5a. cover element corner fixing element
6. fixing zone towards the holding loop
- 5 7. elastic portion fixing zone towards the end element
8. elastic portion
9. loop portion limiting the stretching of the elastic portion
- 10 10. elastic portion fixing zone
11. loop portion fixing zone
12. side portion
13. side portion hook and loop fastener component
14. neck leash-holding element
- 15 14a. closing element
15. leash-holding end element
16. loop holding the leash-holding end element
17. neck extension of the leash-holding element
18. extension holding element
- 20 18a. extension fastener element
19. back part slide adjuster
20. neck strap
- 20a. slide adjuster
21. chest lining element
- 25 22. neck fastener element
23. back part fastener element
24. edging element
25. lining/underlay
26. saddle part
- 30 27. axis line
28. back strap
29. chest part
30. belly strap
31. strip portion opposite to the leash-holding end element
- 35 32. neck padding portion

**Claims**

- 40 1. A dog harness with a leash-holding element with controlled displacement, having a leash-holding element with controlled displacement (3) formed on the dog harness (1), which comprises a back part (2), a back strap (28) connected thereto and a leash-holding end element (15) included in a loop holding the leash-holding end element (16), furthermore a chest part (29) and/or neck strap (20), and a belly strap (30) connected to the back part (2), furthermore an elastic portion (8), and furthermore the stretching of the dog harness (1) as a function of the forces acting when leading the dog on a leash is controlled by at least one loop portion limiting the stretching of the elastic portion (9) of the dog harness (1), **characterized in**
- 55 **that** the leash-holding element with controlled displacement (3), arranged symmetrically on the back part (2) of the dog harness (1), on the axis line (27),



- on both sides of the axis line (27), comprises a leash-holding end element (15), a loop holding the leash-holding end element (16), an underlay (25) lining it at least partially, at least one elastic portion (8) resting flat thereon and a loop portion limiting the stretching of the elastic portion (9), protruding from the back part (2), traversable perpendicularly to the axis line (27), forming an open loop, and separated from the leash-holding end element (15) by a strip limiting cover element (4), furthermore the underlay (25) and the strip limiting cover element (4) extend beyond the loop portion limiting the stretching of the elastic portion (9) in the direction perpendicular to the axis line (27), on both sides of the axis line (27), and are fixed together on both sides of the axis line (27) in a strip limiting cover element fixing zone (5), forming a traversable opening open in the direction of the axis line (27), resting flat on the back part (2), and thereby, as a function of the forces acting through the leash-holding end element (15), the elastic portion (8) and the loop portion limiting the stretching of the elastic portion (9) intrude between the strip limiting cover element (4), the underlay (25) and the strip limiting cover element fixing zones (5) in the direction of the leash-holding end element (15), furthermore the movement of the elastic portion (8) and the loop portion limiting the stretching of the elastic portion (9) in any direction other than parallel to the axis line (27) is tightly limited on both sides of the axis line (27) by the strip limiting cover element (4) and the strip limiting cover element fixing zones (5).
2. The dog harness with a leash-holding element with controlled displacement according to claim 1, **characterized in that** the distance between the elastic portion fixing zone (10) and the elastic portion fixing zone towards the end element (7) on the same side of the axis line (27) of the leash-holding element with controlled displacement (3) is larger than the distance between the fixing zone towards the holding loop (6) and the loop portion fixing zone (11).
  3. The dog harness with a leash-holding element with controlled displacement according to any of claims 1-2, **characterized in that** at least the end of the underlay (25) towards the leash-holding end element (15) ends under an edging element (24).
  4. The dog harness with a leash-holding element with controlled displacement according to any of claims 1-3, **characterized in that** the underlay (25) is formed at least partially from the saddle part (26), in the continuation thereof.
  5. The dog harness with a leash-holding element with controlled displacement according to any of claims 1-4, **characterized in that** the strip limiting cover element (4) ends under the edging element (24) on both sides of the axis line (27).
  6. The dog harness with a leash-holding element with controlled displacement according to any of claims 1-5, **characterized in that** the side portion hook and loop fastener component (13) ends under the strip limiting cover element (4).
  7. The dog harness with a leash-holding element with controlled displacement according to any of claims 1-6, **characterized in that** the displacement of the loop holding the leash-holding end element (16), controlled by the loop portion limiting the stretching of the elastic portion (9), is confined to between the strip limiting cover element (4) and the edging element (24).
  8. The dog harness with a leash-holding element with controlled displacement according to any of claims 1-7, **characterized in that** the strip limiting cover element (4) is perpendicular to the leash-holding element with controlled displacement (3).
  9. The dog harness with a leash-holding element with controlled displacement according to any of claims 1-8, **characterized in that** the leash-holding element with controlled displacement (3) has an extension holding element (18) at the strip portion opposite to the leash-holding end element (31), connecting the back part (2) and a neck extension of the leash-holding element (17) on the axis line (27).
  10. The dog harness with a leash-holding element with controlled displacement according to any of claims 1-9, **characterized in that** the neck extension of the leash-holding element (17) has at least one neck leash-holding element (14) on the axis line (27).
  11. The dog harness with a leash-holding element with controlled displacement according to any of claims 1-10, **characterized in that** the neck leash-holding element (14) has a closing element (14a), which can close the neck leash-holding element (14) flat on the neck extension of the leash-holding element (17).
  12. The dog harness with a leash-holding element with controlled displacement according to any of claims 1-11, **characterized in that** there is a cover element corner fixing element (5a) at the point of the strip limiting cover element fixing zone (5) closest to the leash-holding end element (15) on both sides of the axis line (27), arranged symmetrically.

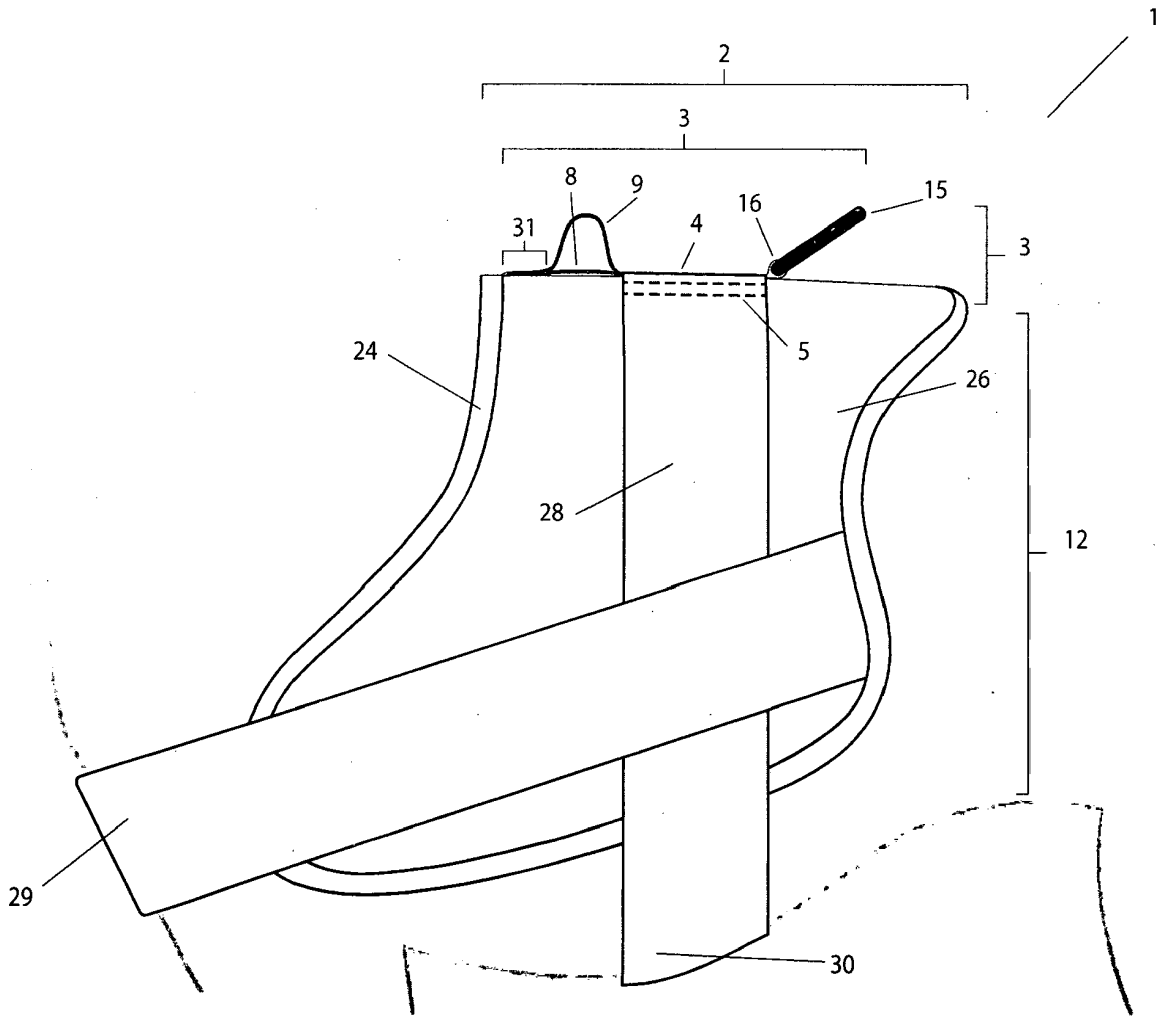


Figure 1

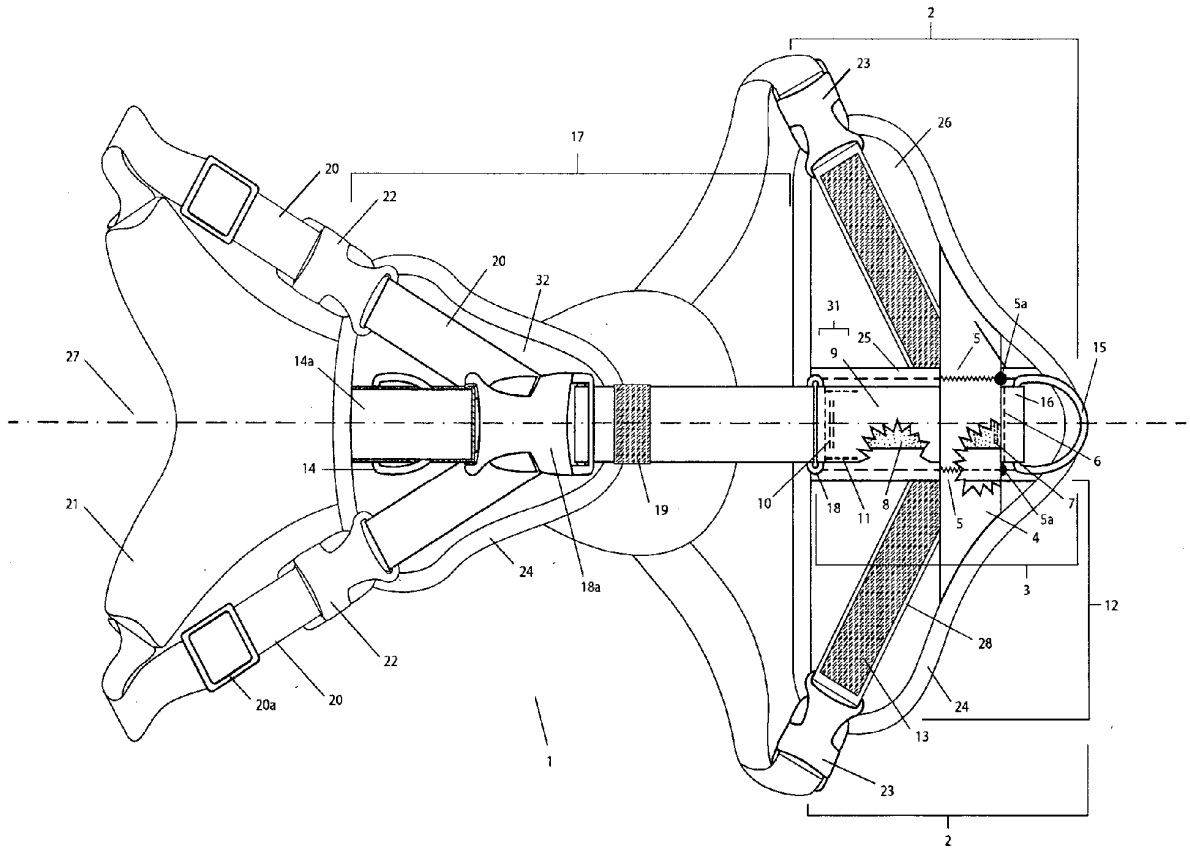


Figure 2

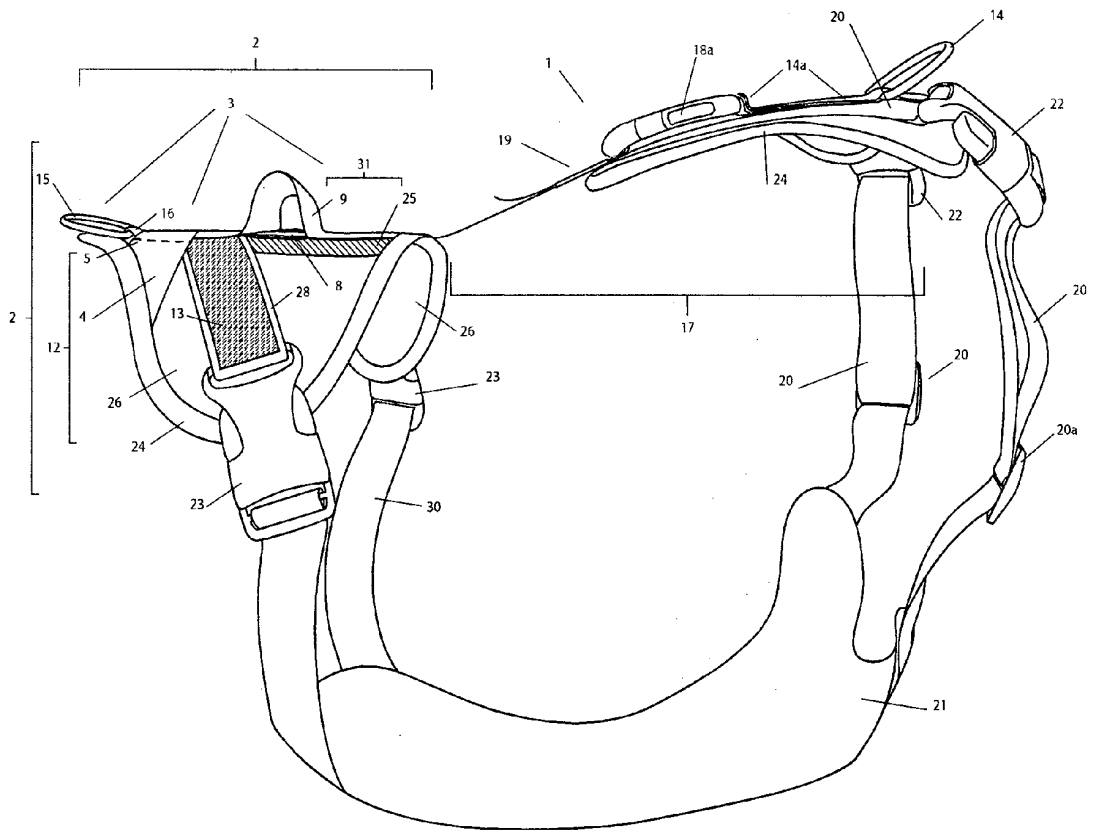


Figure 3



EUROPEAN SEARCH REPORT

Application Number  
EP 18 00 0249

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
			A01K
1 The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		18 June 2018	Pacevicius, Matthias
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	

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18-06-2018

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**REFERENCES CITED IN THE DESCRIPTION**

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