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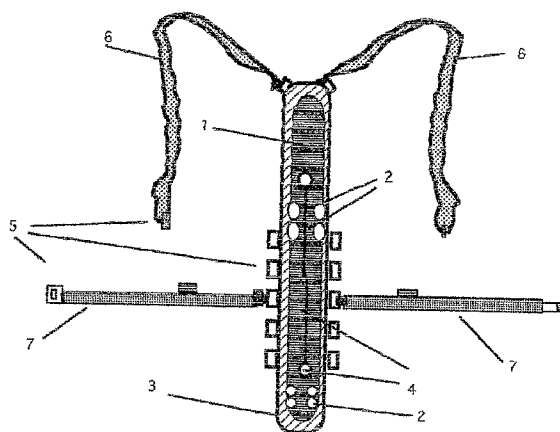
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(54) Title: SPINE COVER



Spine Cover

(57) Abstract: Spinal troubles and diseases pose a major problem to modern medicine. About a third of the population in underdeveloped world suffers from chronic backache. In poorer countries the situation is even more dramatic. Research studies show that every sixth person must take a sick leave at least once a year due to chronic spinal troubles. Spinal diseases affect at any moment 25-30% of the population. The ways of dealing with this problem by means of exercises, electric shocks, spas, drugs and physiotherapeutic methods have remained largely ineffective. From the scientific point of view, the real cause of spinal diseases is cooling which weakens the metabolism of spinal tissues. The consequences of cooling are: decelerated metabolism, impaired blood circulation and increased sedimentation of harmful products in spinal tissues, which all sets the stage for the onset of backache. The Spine Cover is an invention which under various weather and working conditions protects the spine from adverse effects of changing temperatures, humidity, wind. The Cover makes the warmth move towards the spine and stay there, thereby ensuring the continuity of physiological processes in the spine, conditioning it and keeping it ready for long and healthy functioning.

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SPINE COVER

DESCRIPTION OF THE INVENTION

Area covered by the Invention

According to the International Patent Classification (IPC) the Invention is classified under Section A - HUMAN NECESSITIES,

Subsection A 41 WEARING APPAREL (A 41 D outerwear; protective garments; accessories), and A 41 B underwear), and

Subsection HEALTH; AMUSEMENT

A 61 F Fomentation, bandages, dressings

A 61 H physical therapy apparatus, massage, devices for stimulating reflex points in the body, special-purpose devices,

A 61 K preparations for medical or toilet purposes, chemical aspects of, or use of materials for, bandages, dressings

A 61 M devices for introducing media into, or onto, the body

A 61 N Magnetotherapy

Technical problem

Spinal troubles and diseases pose a major problem to modern medicine: How to cope with an increasing number of various kinds of backache around the world? Today 15% of working population is on sick leave due to spinal troubles. A significant number of deaths is also associated with backache.

The ways of dealing with this problem by means of belts, exercises, electric shocks, spas, drugs and physiotherapeutic methods have remained largely ineffective.

Spinal diseases affect at any moment 25% of the population, a percentage which tends to grow, especially with age. Among people in their sixties it rises to 69%.

The percentage of spinal diseases is on the rise in all groups and sections of the society. And in all countries.

No other part or organ of the human body suffers so much strain, so many sudden unpredictable stresses as the spine does. And no other organ is the cause of so many sick leaves and disabilities as the spine is.

Initially, many spinal diseases are not accompanied by pains, but as they recur they become more and more expressed and turn into occasional or chronic conditions which impair the vitality and working capability of the spine, or often shorten the length of the active age or even the lifetime of those affected.

Backache seems to have always accompanied human life more than any other diseases.

Over the past 2,500 years life expectancy has prolonged by almost 25 years. Over that history many diseases have appeared and disappeared. Backache, however, seems to have been progressing.

Anyway, there is hardly a person today who hasn't at least once in life experienced a fierce backache.

About a third of the population in the underdeveloped world suffers from chronic backache.

Extensive research studies have shown that every sixth person must take a sick leave at least once a year due to spinal troubles. These are particularly pronounced in the most active age, in the fourth and fifth decade of life.

According to some estimates, lumbar diseases are causing up to 30% of total disability in Croatia, and that percentage is similar to other countries.

Many causes of lumbago and backache include: cooled, undernourished tissue, disrupted absorption of various metabolites, sudden and excessive spinal strain, incorrect posture during work or while sitting, stressful situations, etc.

I have myself undergone the torments of backache in my forties. I was forced to take sick leaves four or five times a year. Sitting at my office desk was taking health off my spine.

Voltarene had to be always within reach in my office desk, in my briefcase, in the car, at home... I started thinking about backache in general, and about my backache in particular some time in 1988.

In 1990 already I stopped swallowing Voltarene... But at that time the patented Spine Cover didn't exist yet. It was just a bagful of toxic herbs... God save us... But it's over... Now my spine is better in winter than it ever was in midsummer... Earlier, 26 years ago, I couldn't even think of dancing twist! Today, 18 years afterwards, I can! I swallowed at least 1 kg less of Voltarene... and none since 1990...

The answer partially lies in how we thought about the causes and we thought up a solution, the Spine Cover.

Based on experiences, I am confident that this Invention will also help others.

Prior art

Various exercises, physical therapy, electrotherapy, spa treatment, acupuncture, drugs and surgical operations, these are generally known and universally accepted methods of curing the spine or keeping it in good shape. Nevertheless, with due respect for whatever the state-of-the-art offers to patients, there is no foolproof therapy or a drug or an aid able to provide a successful preventive cure, a lasting protection or a cure for an ailing spine.

The number of fitness devices is on the rise, and so are demands for spa therapy. The sales of eclectic devices designed to help in healing the spinal troubles are booming world-wide.

Physicians are kindly tolerating patients, patients are kindly tolerating physicians. Hosts of our contemporaries are making pilgrimages to temples-hospitals to bow before various electronic,

physiatric and fitness aids, only to come back run-down to their advancing backache routine... Everybody is heaving a sign of resignation, while the number of diseases is rising!

The Invention revealed in this patent application is promising better days and more success in the fight against backache!

The essence of the Invention

As the whole spine, viewed outwardly from a profile, is exposed to out-of-body influences, while being covered with just some millimetres of garment, its outer part is in the whole length permanently exposed to the action of variable temperatures, sometimes much lower than the temperature of the part turned inwards, to the effect that inside the spine, in its bone part and other tissues a difference in temperature appears which can reach up to 2.5°C.

Hence it occurred to us a long time ago that it is from this endangered, external side that the spine should be protected. This Invention is a result of such reasoning.

The primary goal of our Invention is to keep the spine in healthy condition, in a condition in which it will easily sustain any strain to which it is exposed over days, months, years, over the whole life, but without depriving a person of any of his or her comfort, habits or working abilities.

The use of our Invention will successfully prevent backache relapses. Experience shows that the user's working ability and health are rapidly recovering.

Achieving this required a thorough analysis of various factors causing spinal troubles, including those which medicine has not sufficiently heeded so far, but which occasionally or continuously, sometimes simultaneously act on the spine, relentlessly amassing to a point at which backache becomes inevitable.

These factors are:

1. Weakened blood circulation of bones, bone and connective tissue, severalfold, or even tenfold weaker than that of muscles or other organs.
2. A strong influence of external temperature variations on the spine and thereby on the flow of physiological solutions through spinal tissues and on the speed of metabolism in bone and other

cells. The influence on metabolism in spinal tissues is so manifested that just 2 degrees lower temperatures can disrupt and slow down the flow of solutions and metabolism in the spine.

3. Lower temperatures, it is a known fact, can reduce the elasticity of tissue, especially connective tissue, spinal joints and muscles.

4. Lower temperature precipitate sedimentation, crystallisation of mineral ureic colloids in the spine's bone cells and tissues, in the tissues of sockets, in connective tissues and muscles.

Backache usually appears when the above mentioned causes accumulate their adverse action over a longer period of time, until a point is reached where it suffices to lift a weight or make a sudden movement to induce lumbago or an excruciating pain that confines you to bed. It should be noted that many people are aware of their stiff and cold back preceding an outbreak of lumbago...

There is a high degree of interconnection between recurring or prolonged hypothermia in the spinal area, the impaired blood circulation of the spine and weakened nourishment of spinal tissues.

In a situation like this the spine is becoming less pliable and less able to perform its function of carrying weight and enduring shorter or longer strains. Circumstances arise favouring the onset of a spinal disease or trouble.

The Invention, the Spine Cover, as specified in Patent Claim 2, is characterised in that a thermoaccumulative layer (1), magnets (2), a thermoresistant layer (3) and a flexible spring hemmer (4) are sewn into a case (8) having a pocket into which other components can be inserted, whereas buckles (10) on the case (8), elastic straps (6) for holding over the shoulder and elastic straps (7) for holding around the waist serve for adjusting the Cover to the body.

The Invention, the Spine Cover, is put over the undershirt, with its lower part tucked in the underpants for better fitting to the body.

The primary purpose of the Invention is to achieve constancy in body temperature in the spinal area. This helps the physiological and physical processes in spinal tissues to evolve to optimum degree.

Indeed, we have come to the conclusion that the condition and healthy physical functioning of the spine depend on good blood circulation, metabolism and physiological processes going on in spinal tissues.

With the Invention we have succeeded in achieving a lasting preservation and optimisation of the healthiest body temperature in spinal bones and tissues (and that in our view is the temperature that the body has already generated).

The Spine Cover accumulates the temperature that the body passes on to the colder surrounding and partially returns it to spinal tissues.

Satisfactory results in using this Invention are achieved in both the prevention and the treatment of backache in its various phases.

Wearing the Spine Covers is rewarding in just two or three days: pains are alleviated, the diseases and stiffness of the spine are gradually disappearing.

The Spine Cover operates as a warmth accumulator which offsets the effects of the changeable ambient temperature and prevents rapid cooling of the spine, even in circumstances where other parts of the body have already become quite cold.

The moment the Spine Cover is put over the spine, it starts absorbing the warmth emitted by the body, accumulates it and during a shorter exposure to coldness sends it back to the body.

During a longer exposure to lower temperatures, during prolonged standing or sitting at a PC, etc., the Spine Cover efficiently prevents cooling below the dangerous limit and always retains as much warmth as is necessary for metabolism in spinal tissues to evolve without deviations likely to cause undesired cooling effects.

Fight against backache will be won once we ensure a continuity of optimum body temperature in the spinal area even in cold and moist spaces, as well as in strenuous working conditions.

The Invention presented in this patent application alone ensures optimum temperature required for satisfactory metabolism in spinal tissues.

Even if only occasionally worn, the invented Spine Cover will reduce and curb the cumulative effect of harmful factors on the metabolism of spinal tissues, the disorders of which actually cause backache.

By wearing the Spine Cover we are at once weakening and eliminating the already existing spinal troubles. The Spine Cover will bring the spine to its best seasonal health status, such as it usually is after a spa therapy or in summer.

A brief description of attached drawings

The drawings attached as a constituent part of the description of the Invention illustrate so far the best way of applying the Invention in practice and should help explain the basic principles of the Invention.

Covers designed to improve the health of the spine

Figure 1 The Spine Cover in accordance with the described Invention. Patent Claim 1

Figure 2 The Spine Cover in accordance with the described Invention, inside a special case. Patent Claim 2

Figure 3 The Spine Cover in accordance with the described Invention, fastened around the waist by broad elastic straps.

Figure 4 The Spine Cover in accordance with the described Invention, fastened or inserted into a pocket sewn on the back of an undershirt or a T-shirt.

Figure 5 The Spine Cover in accordance with the described Invention, attached to the back of overalls or other trousers.

Figure 6 The Spine Cover in accordance with the described Invention, worn as suspenders.

Detailed description of at least one way in which the Invention can be applied

The Spine Cover has been made according to Patent Claim 1 and Figure 1 and tried on us and others. It has fulfilled all the expectations of its authors in both functional and ergonomic respect. We have tailored it 5 cm wide, 63 cm long (the length of the spine and the lumbar part taken together), on the sides it has studs for adjusting the height – position on the spine. It is supported by elastic straps which can be adjusted and moved up and down, left and right. Let us recall the words of gratitude expressed by a kindergarten nurse:

- Thank you for making my group of children like me again!
- What do you mean? How does the Spine Cover relate to your group of children?
- Oh, it does! I can play with them again, roll with them on the floor. After a year of suffering, my spine causes me no pain any more and now I can play with children as I used to before. Children are perceiving me again as their good auntie. Your Cover has rejuvenated me!

The design of the Spine Cover according to Patent Claim 1 and Figure 1 is simple and acceptable to all users, from those spending their working day at the PC to those working out in the field.

In the prevention and treatment of lumbago many recommend all kinds of corsets, which is wrong. A healthy and warm spine will always be able to sustain some extra weight. Depending on the type of job, working conditions and strains that the spine is exposed to, our Invention, the Spine Cover, is recommended for drivers, medical nurses, administrative staff, housewives, farmers, construction and railroad workers, policemen, soldiers, fishermen and sailors.

A person suffering from backache will experience the Spine Cover as a wholesome solution for revitalisation, preservation and treatment of the spine, although at first many people in Croatia and abroad will shirk from wearing our Invention on a daily basis as a piece of garment, as a protective and curative cover designed to protect and revitalise the spine. But we insist that it marks the beginning of a more efficient fight against spinal diseases and disorders. Having explored the state-of-the-art in this field, our patent lawyer has concluded that there is no such Invention in the world.

Application of the Invention

The Spine Cover is a new piece of clothing, the primary function of which is medical – to protect the spine from changing temperatures and stressful working conditions.

Its width is about 5 cm, its length matches the length of the spine and the lumbar section of the back. Height is adjusted by studs on the sides. It is supported by adjustable elastic straps.

The most convenient way of wearing the Spine Cover is over the undershirt, with its lower part tucked in the underpants.

The Spine Cover is easily worn all the time, at work and out of work. It fits nicely to the body and is not seen under the shirt.

Wearing the Spine Cover will significantly reduce sick leaves and treatment costs, and it will significantly prolong the working age of the employees.

The Spine Cover can be easily put on and taken off, even if you wear other garments.

It is reasonable to expect that the Spine Cover will soon be put on the list of protective clothing, because it is more efficacious than the existing protective clothing and less of a hindrance in work.

Indeed, just as the shoe once became an article to protect the feet, the herein presented Spine Cover will become a generally accepted article of clothing to protect the spine of many people around the globe.

Let us try and imagine the times when shoes were still unknown to people, and someone comes forward and tells people that shoes will become an obligatory part of human clothing. What would have happened with such a person? He would have been ridiculed perhaps even stoned!

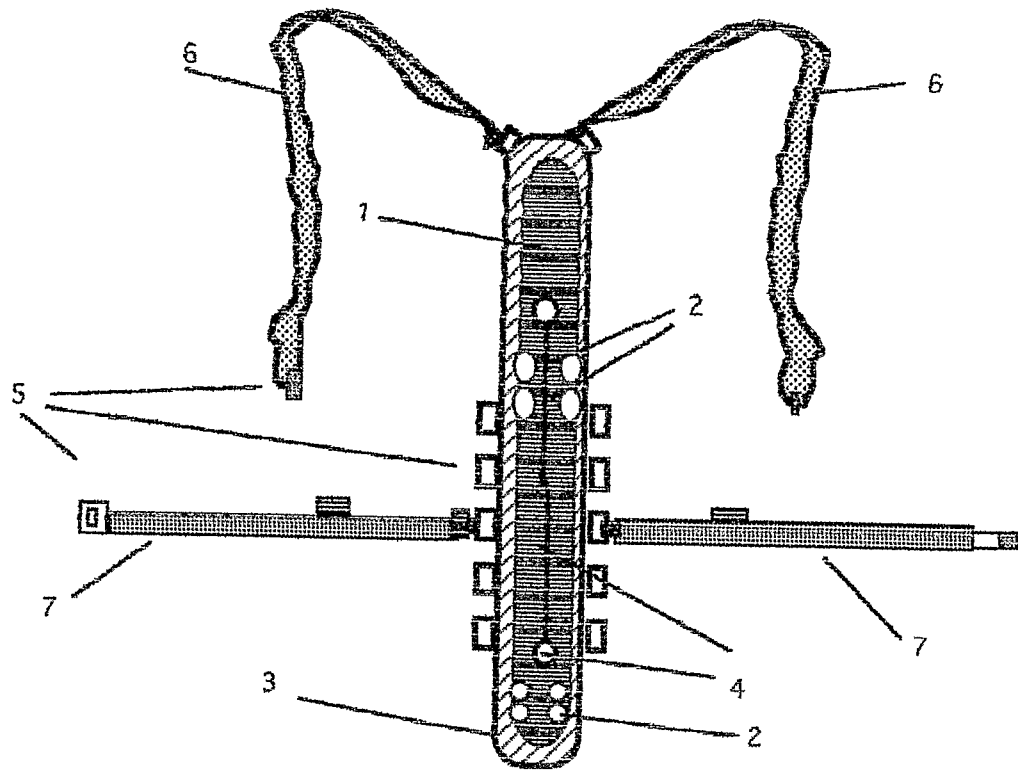
PATENT CLAIMS

1. The Spine Cover, is **characterised in that** it consists of a thermoaccumulative layer (1) made of one or more textile, plastic, mineral granulate or rubber parts; magnets (2) fastened to them; a thermoresistant layer (3) and a flexible spring hemmer (4), all sized to cover the spine wholly or partially in width and length; buckles (5); elastic straps (6) for holding over the shoulder and elastic straps (7) for holding around the waist, adjustable to the body.
2. The Spine Cover, as in Patent Claim 1 above, is **characterised in that** the thermoaccumulative layer (1), the magnets (2), the thermoresistant layer (3) and the flexible spring hemmer (4) are sewn into a special case (8) having a pocket (9) into which other pieces can be inserted, whereas the buckles (10) on the case (8), the elastic straps (6) for holding over the shoulder and elastic straps (7) for holding around the waist serve for adjusting the Cover to the body.
3. The Spine Cover, as in Patent Claims 1 and 2 above, with a guard for kidneys, is **characterised in that** attached to the case (8) and to the buckles (10) for holding around the waist are broad elastic straps (11) having pockets (12) into which the thermoaccumulative layer (1), the magnets (2), the thermoresistant layer (3) and other components can be inserted.
4. The Spine Cover, as in Patent Claims 1 and 2 above, with an undershirt, a T-shirt, a vest or another garment, is **characterised in that** the thermoaccumulative layer (1), the magnets (2), the thermoresistant layer (3) and the flexible spring hemmer (4), with or without the case (8), are inserted into a pocket (13) placed on the spinal part of the back of an undershirt or a T-shirt (14), tucked in the underpants, where the tightening of the T-shirt makes it fit better to the body and the spine.
5. The Spine Cover, as in Patent Claims 1 and 2 above, with overalls, is **characterised in that** the thermoaccumulative layer (1), the magnets (2), the thermoresistant layer (3) and the flexible

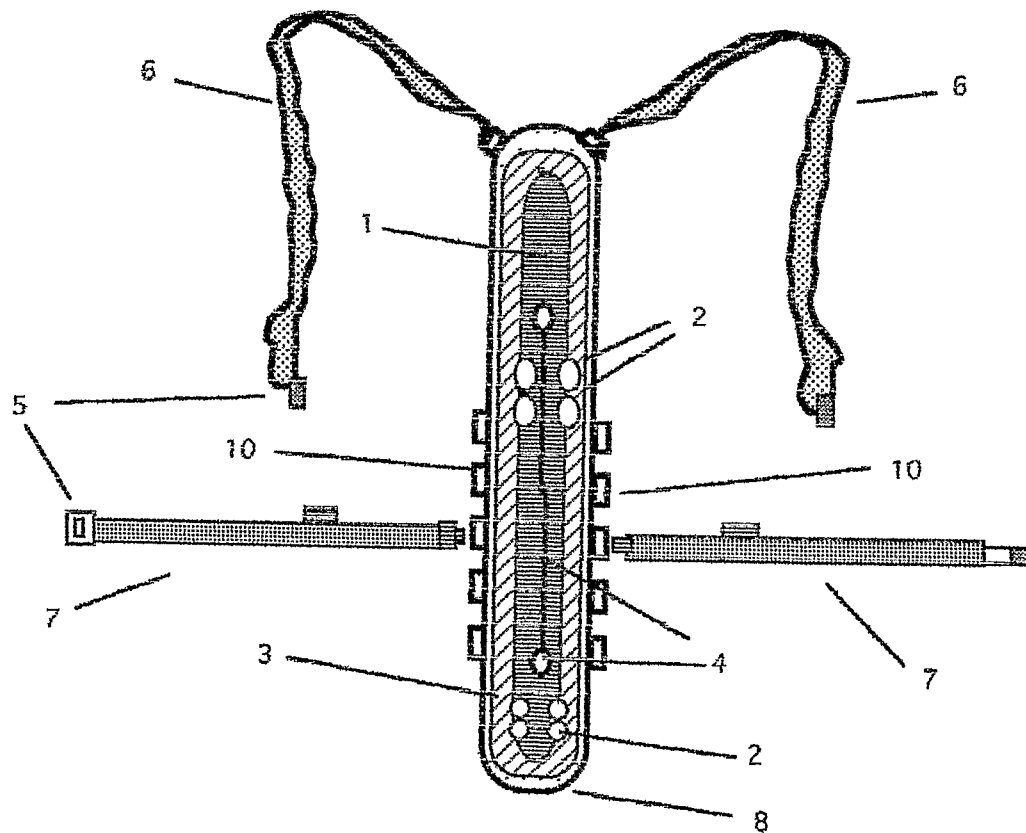
spring hemmer (4) are inserted into a pocket (13) sewn on the back of the trousers (14), from the coccyx to the neck, or in that the case (8) is fastened or buckled to the inside of the back of the trousers (14), by means of which it is kept in the position of covering the spine.

6. The Spine Cover, as in Patent Claims 1 and 2 above, with suspenders, is **characterised in that** the case (8) is a part of the suspenders (15) covering the spine, and the elastic straps (6) over the shoulder are also a part of the suspenders (15) which are clipped to the front part of the trousers to support them in front, and the adjustable elastic straps (7) around the waist are back suspenders (15) which are clipped to the back of the trousers to support them there, with the lower part of the case (8) being tucked in the trousers and kept in position by tightening the trousers.

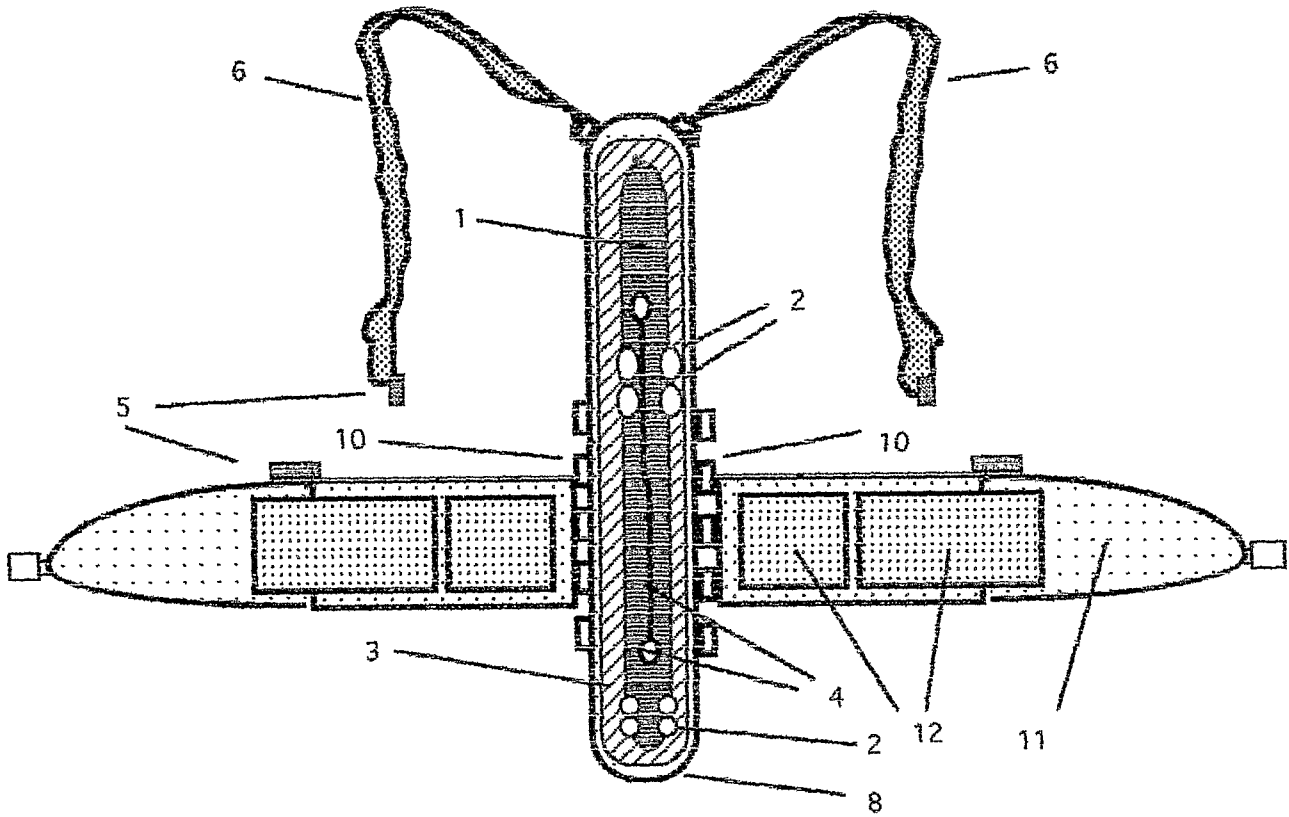
7. The Spine Cover is **characterised in that** the undershirt, T-shirt, shirt, pullover or another garment (14) has on the back a sewn or woven thicker layer or a sewn pocket (13) in a width covering the spine and in a length also covering the coccyx in whole or in part from the neck down the spine.



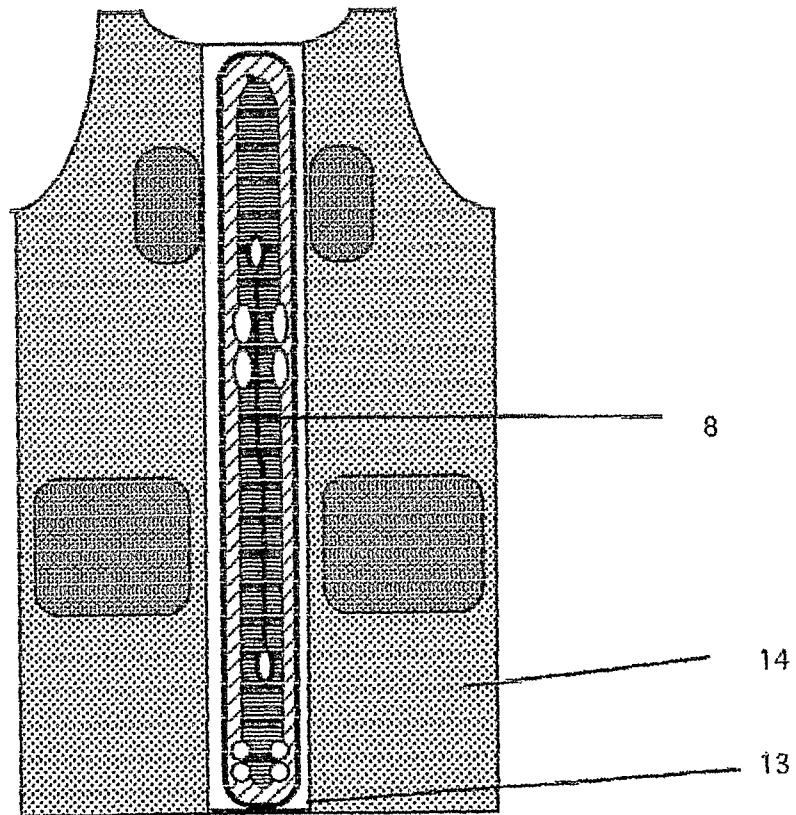
Drawing No 1. Spine Cover



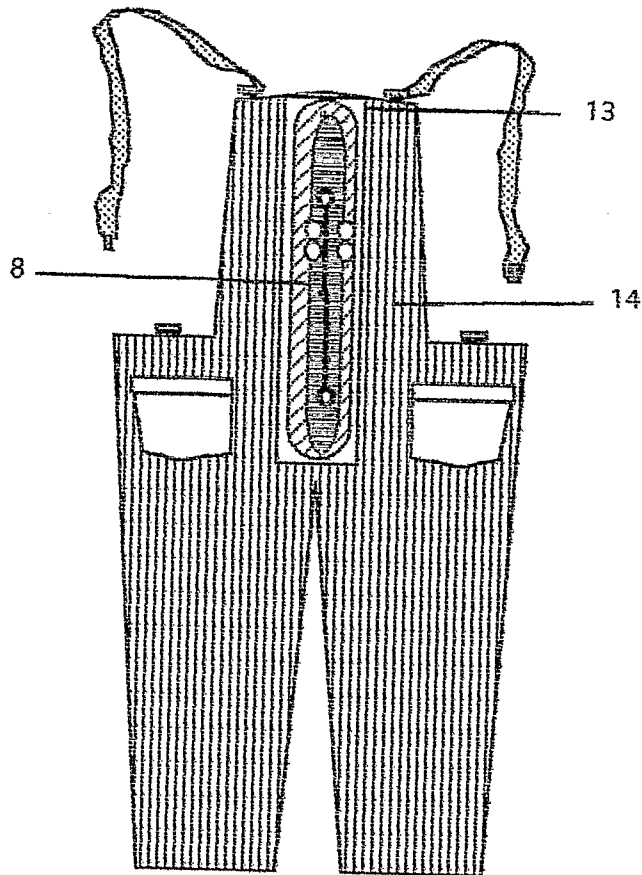
Drawing No 2. Spine Cover in the linen bag



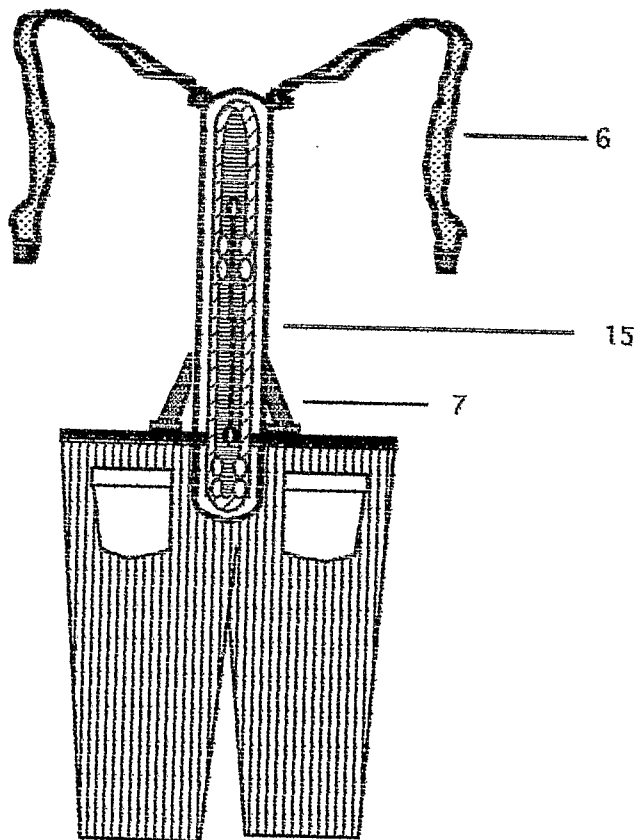
Drawing No 3. Spine Cover with wide waist straps



Drawing No 4. Spine Cover with undershirt



Drawing No 5. Spine Cover sewn in at the back of trousers



Drawing No 6. Spine Cover as trouser suspender