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*[Continued on next page]*

(54) Title: CRYOTHERAPY AND COMPRESSION SLEEVE AND METHODS OF USE

(57) Abstract: An elastic material or other stretch material formed as a layer or cylinder and capable of holding hot or cold temperature and radiating such temperature through contact and an elastic fabric adhered to the elastic material capable of providing a protective cover and a fabric liner between a user's skin and the elastic material and, thus, functions to conform to user's body providing evenly distributed encompassing cold or hot temperature application, a fabric liner between user's skin and the hot or cold therapy, even application of compression therapy without the need for clips or buckles.

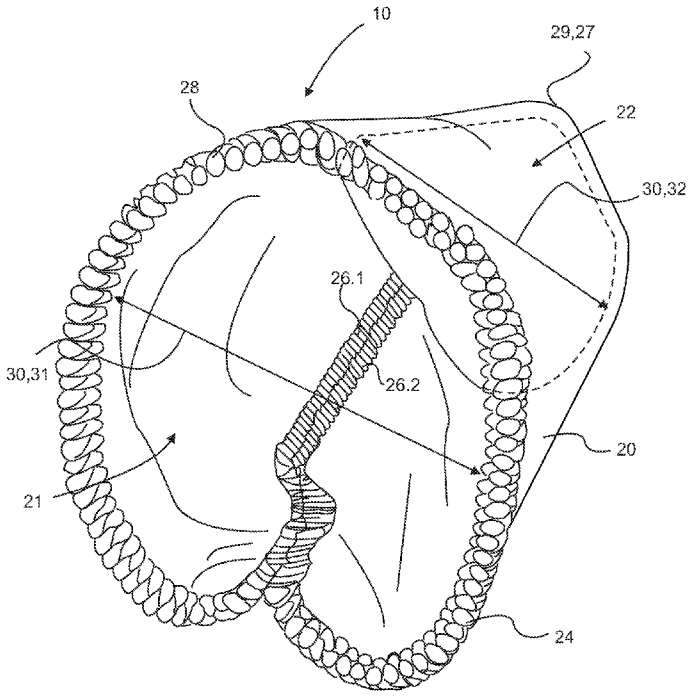



Fig. 1

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# CRYOTHERAPY AND COMPRESSION SLEEVE AND METHODS OF USE

## CROSS-REFERENCE TO RELATED APPLICATIONS

To the full extent permitted by law, the present United States Non-provisional Patent Application hereby claims priority to and the full benefit of, United States Provisional Application entitled "A combined cryotherapy and compression sleeve free from all fastening devices and removeable gel-packs to treat sore muscles and/or joints," having assigned serial number 62/199,623, filed on July 31, 2015, which is incorporated herein by reference in its entirety.

## FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

None

## PARTIES TO A JOINT RESEARCH AGREEMENT

None

## REFERENCE TO A SEQUENCE LISTING

None

## TECHNICAL FIELD

The disclosure generally relates to a limb or body part cover. More specifically, the instant disclosure relates to a cold and compression therapy apparatus with a combined cryotherapy and compression for treatment of a sprained, strained, or bruised body part.

## BACKGROUND

Muscle and joint injuries are common in life, sports, and exercise. As soon as possible after an injury, such as an elbow, knee or ankle sprain, you can relieve the pain and swelling and promote healing with rest, ice, compression, and elevation. Specifically, ice will reduce pain and swelling, and compression or wrapping the injured or sore area with an elastic bandage (such as an Ace wrap), will help decrease swelling.

Inflammation is a localized physical condition in which part of the body becomes reddened, swollen, hot, and often painful, especially as a reaction to injury. One approach is the concept of icing or application of ice (cryotherapy) to the skin above an area of a ligament sprain, muscle strain, bruise or the like. Ice is also often helpful with chronic overuse or tissue fatigue injuries such as carpal tunnel syndrome, tennis elbow, supraspinatus tendinitis, iliotibial band syndrome, patellofemoral pain syndrome, shin splints, plantar fasciitis, or tendinitis, especially joints healing from repetitive injury. One disadvantage with this approach is ice is wet and slippery especially once it begins to melt making it difficult to hold in place on the area of the injury. Moreover, ice is rigid, non-conforming, and

fluctuates in temperature being too cold at first and then not cold enough once the ice partially melts leaving insulating water between the injury and the ice. Furthermore, ice should not be applied directly to the skin rather a towel or other fabric liner should be placed between the skin and the ice.

Another approach is the concept of compression therapy or application of compression to an injured area such as, one of the injuries listed above. Compression is a simple and efficient mechanical principle, the application of an elastic band, around the area of a ligament sprain, muscle strain, bruise or the like to stabilize the injury and decrease swelling. One disadvantage with this approach is wrapping the elastic band too tightly resulting in more swelling in the injured area. Moreover, this approach requires external fasteners, such as clips or buckles to hold the elastic band in place. Furthermore, this approach of wrapping an elastic band around a joint, such as an elbow, knee, ankle or shoulder, loosens its grip during joint use or movement.

Therefore, it is readily apparent that there is a recognized unmet need for a cryotherapy and compression

sleeve and methods of use that designed to address at least some aspects of the problems discussed above.

## BRIEF SUMMARY

Briefly described, in example embodiment, the present apparatus overcomes the above-mentioned disadvantage, and meets the recognized need for a cryotherapy and compression sleeve and methods of use including, in general, an elastic material or other stretch material formed as a layer or cylinder and capable of holding hot or cold temperature and radiating such temperature through contact and an elastic fabric adhered to the elastic material capable of providing a protective cover and a fabric liner between a user's skin and the elastic material and, thus, functions to conform to user's body providing evenly distributed encompassing cold or hot temperature application, a fabric liner between user's skin and the hot or cold therapy, even application of compression therapy without the need for clips or buckles.

In an exemplary embodiment, an apparatus for wrapping a body part, the apparatus including an elastic material formed as a layer and having a first surface and a second surface, the elastic material configured for hot or cold temperature transfer and compression thereof the

body part, and an elastic fabric adhered to the first surface and the second surface of the elastic material, the elastic fabric configured to provide a protective cover for the first surface and a liner for the second surface.

In still a further exemplary embodiment of a method of utilizing a hot or cold temperature transfer and compression sleeve to wrap a user's body part therein, the method including the steps of forming an elastic material in a mold and having a first surface and a second surface, the elastic material configured for hot or cold temperature transfer and compression thereof the body part, positioning the elastic material thereon an elastic fabric having a first elastic fabric and a second elastic fabric, the first elastic fabric adhered to the first surface and the second elastic fabric adhered to the second surface of the elastic material, the elastic fabric configured to provide a protective cover for the first surface and a liner for the second surface, pressing the elastic fabric thereto the elastic material, sealing first elastic fabric thereto the second elastic fabric to hold the elastic material therein, affixing a first fabric edge of the first elastic fabric thereto a second fabric edge of the second elastic fabric to form an open ended tub.

Accordingly, a feature of the cryotherapy and compression sleeve and methods of use is the ability to utilize elastic material or other compatible hot/cold multi-directional stretch material formed as a layer, cylinder, or other shape and configured to encompass a body part or section of a limb, such as an ankle, knee, wrist, elbow, or other body part.

Another feature of the cryotherapy and compression sleeve and methods of use is the ability to utilize elastic fabric or other compatible multi-directional stretch fabric and configured to provide an outer protective cover for the elastic material and an internal fabric liner for the elastic material to act as a transition barrier between a user's skin and the elastic material.

Still another feature of the cryotherapy and compression sleeve and methods of use is its ability to be formed cylindrically or tube shaped, or with or without a tapper from one end to the other and having openings on each end.

Yet another feature of the cryotherapy and compression sleeve and methods of use is its ability to fully encompass or surround the targeted area, such as a

body part or section of a limb, such as an ankle, knee, wrist, elbow, or other body part, and maintain its fit and placement.

Yet another feature of the cryotherapy and compression sleeve and methods of use is its ability to enable one hand installation thereon a user's targeted area, such as a body part or section of a limb, such as an ankle, knee, wrist, elbow, or other body part without the use of pins, fasteners, ties, wraps, clasps, or other fasteners.

Yet another feature of the cryotherapy and compression sleeve and methods of use is its ability to store in a flat configuration and may be stacked, rolled, or folded taking up a small space, especially when cooling in a freezer.

Yet another feature of the cryotherapy and compression sleeve and methods of use is its ability to maintain its soft and flexible form at all times whether hot, warm, cool or cold.

Yet another feature of the cryotherapy and compression sleeve and methods of use is its ability to be heated and cooled without losing its shape.

Yet another feature of the cryotherapy and compression sleeve and methods of use is to provide an elastic material completely encapsulated by the elastic fabric.

Yet another feature of the cryotherapy and compression sleeve and methods of use is to provide an integral elastic material encapsulated by the elastic fabric enabling the sleeve to be heated or cooled together.

Yet another feature of the cryotherapy and compression sleeve and methods of use is to provide an integral elastic material encapsulated by the elastic fabric having an integral fabric liner positioned between the skin and the cold source.

Yet another feature of the cryotherapy and compression sleeve and methods of use is it provides a non-condensation forming integral elastic material encapsulated by the elastic fabric sleeve different from ice, ice packs, or gel packs making it difficult to hold ice, ice packs, or gel packs in place on the area of the injury.

Yet another feature of the cryotherapy and compression sleeve and methods of use is it provides a flexible conforming integral elastic material encapsulated by the elastic fabric sleeve.

Yet another feature of the cryotherapy and compression sleeve and methods of use is it provides a more constant temperature apparatus formed of elastic material verses large fluctuations in temperature being too cold at first and then not cold enough once the ice or ice packs begin to melt.

Yet another feature of the cryotherapy and compression sleeve and methods of use is it provides a flexible conforming integral elastic material encapsulated by the elastic fabric sleeve in various sizes to prevent an overly tight fit resulting in more swelling in the injured area.

Yet another feature of the cryotherapy and compression sleeve and methods of use is it provides a flexible conforming integral elastic material encapsulated by the elastic fabric sleeve that requires no external fasteners, such as clips or buckles to hold the elastic band in place.

Yet another feature of the cryotherapy and compression sleeve and methods of use is it provides a flexible conforming integral elastic material encapsulated by the elastic fabric sleeve that does not loosen around a joint, such as an elbow, knee, ankle or shoulder, nor loosens its grip during joint use or movement.

Yet another feature of the cryotherapy and compression sleeve and methods of use is its safe, simple, inexpensive, and easy to self-apply.

Yet another feature of the cryotherapy and compression sleeve and methods of use is it enables both cold and compression with quick and easy application after activity to reduce pain, muscle spasm, inflammation, and blood flow or swelling to the affected area.

Yet another feature of the cryotherapy and compression sleeve and methods of use is it enables both cold and compression to reduce the release of chemicals that cause pain and inflammation.

These and other features of the cryotherapy and compression sleeve and methods of use will become more apparent to one skilled in the art from the following Detailed Description of the Embodiments and Claims when read in light of the accompanying drawing Figures.

## BRIEF DESCRIPTION OF THE DRAWINGS

The present cryotherapy and compression sleeve and methods will be better understood by reading the Detailed Description of the embodiments with reference to the accompanying drawing figures, in which like reference numerals denote similar structure and refer to like elements throughout, and in which:

**FIG. 1** is a side perspective view of an exemplary embodiment of the cryotherapy and compression sleeve;

**FIG. 2** is a cross-sectional view of cryotherapy and compression sleeve shown in **FIG. 1**;

**FIG. 3** is a front view of a user shown with a plurality of wearable positions of the exemplary embodiment of the cryotherapy and compression sleeve shown in **FIG. 1**;

**FIG. 4** is a perspective view of a mold tray utilized to form the elastic material of an exemplary embodiment of the cryotherapy and compression sleeve shown in **FIG. 1**;

**FIG. 5** is a perspective view of the elastic material being affixed to the elastic fabric of cryotherapy and compression sleeve shown in **FIG. 1**; and

**FIG. 6** is a flow diagram of the steps to form the integral elastic material being affixed to the elastic fabric of cryotherapy and compression sleeve shown in **FIG. 1**.

It is to be noted that the drawings presented are intended solely for the purpose of illustration and that they are, therefore, neither desired nor intended to limit the disclosure to any or all of the exact details of construction shown, except insofar as they may be deemed essential to the claimed invention.

## DETAILED DESCRIPTION

In describing the exemplary embodiments of the present disclosure, as illustrated in **FIGS. 1-6** specific terminology is employed for the sake of clarity. The present disclosure, however, is not intended to be

limited to the specific terminology so selected, and it is to be understood that each specific element includes all technical equivalents that operate in a similar manner to accomplish similar functions. Embodiments of the claims may, however, be embodied in many different forms and should not be construed to be limited to the embodiments set forth herein. The examples set forth herein are non-limiting examples, and are merely examples among other possible examples.

Referring now to **FIG. 1** there is illustrated an exemplary embodiment of cryotherapy and compression sleeve **10**. Cryotherapy and compression sleeve **10** may include sleeve body **20** wherein sleeve body **20** may be configured or shaped in the form of a tube or cylindrical shaped or open ended tubular sleeve. It is contemplated herein that sleeve body **20** may be shaped in the form of a tube or cylinder or formed in a planar shape and rolled into a tube or cylinder. Moreover, sleeve body **20** may include one or more openings or apertures, such as first sleeve opening **21** and second sleeve opening **22**. It is further contemplated herein that sleeve body **20** may be tapered between first sleeve opening **21** and second sleeve opening **22**. As such first sleeve opening **21** may be configured having a larger radius (greater than) or sleeve opening diameter **30**, such as first sleeve opening

diameter **31** is greater than and tapper thereto (in diameter) second sleeve opening diameter **32**, or vice-a-versa. Furthermore, cryotherapy and compression sleeve **10** or sleeve body **20** may include one or more edges, such as first sleeve edge **28** and second sleeve edge **29**, which run or traverse the circumference of first sleeve opening **21** and second sleeve opening **22** of sleeve body **20** and/or first sleeve linear edge **26.1** and second sleeve linear edge **26.2**, which run or traverse the length of sleeve body **20**. Either of first sleeve edge **28** and second sleeve edge **29** may include folded sleeve edge **27** or seamed sleeve edge **24**. First sleeve linear edge **26.1**, second sleeve linear edge **26.2**, and/or first sleeve edge **28** may be sealed (seal), affixed, such as by sewn together via single or multiple stitch, hemmed, glued, ties, braids, heated, heat pressed, stapled, snapped, hook and loop, taped, or otherwise attached to configure or shape cryotherapy and compression sleeve **10** or sleeve body **20** in the form of a tube or cylinder.

In use, for example, when sliding a user's hand through first sleeve opening **21** and second sleeve opening **22**, and pulling or sliding cryotherapy and compression sleeve **10** up to the user's bicep muscle to position sleeve body **20** around the user's elbow, then larger opening first sleeve opening **21** grips user's bicep and

smaller opening second sleeve opening **22** grips user's forearm. Similar uses are recognized for user's wrist, forearm, knee, ankle and other body parts.

Referring now to **FIG. 2** there is illustrated an exemplary embodiment of a cross sectional view of a common section of cryotherapy and compression sleeve **10**. Cryotherapy and compression sleeve **10** or sleeve body **20** may include flexible hot or cold transfer material or gel, such as elastic material **40**, or other stretchable material capable of being shaped as a layer, tube, cylinder, bent, or otherwise and capable of holding hot or cold temperature and radiating such temperature change or transfer through contact. It is contemplated herein that elastic material **40** may be shaped in the form of a tube or cylinder or bent as in a 90 degrees or any other acute angle, or formed in a planar shape and rolled into a tube or cylinder having diameter **30**. In one embodiment, elastic material **40** may be formed in a planar shape having perimeter edge **43** or one or more material sides, such as first material side **41** and second material side **42**. Moreover, elastic material **40** may be configured having one or more surfaces **45**, such as first material surface **44** and second material surface **46**.

Elastic material **40** is preferably formed from a hot/cold absorption and transfer capability material (heat transfer) and/or multi-directional stretch elastic material or constructed of other suitable materials such as polymer, gel or the like, that can be utilized, provided such material has sufficient hot/cold absorption and transfer capability and/or multi-directional stretch elastic material capable of being formed as a layer, cylinder, or other shape to encompass a body part or section of a limb, such as an ankle, knee, wrist, elbow, or other body part, and with durability as would meet the purpose described herein.

Furthermore, cryotherapy and compression sleeve **10** or sleeve body **20** may include stretchable fabric or liner, such as elastic fabric **50** configured to provide a protective cover around elastic material **40** or fabric liner or insulation between a user's skin and elastic material **40**. It is contemplated herein that elastic fabric **50** may be adhered (adhesion) or affixed to one or more surfaces **45**, such as first material surface **45** and second material surface **46** wherein elastic fabric **50** may include a protective outer cover, such as first elastic fabric **51** affixed or adhered thereto first material surface **45** and a protective inner or insulating cover,

such as second elastic fabric **52** affixed or adhered thereto second material surface **46**.

Still furthermore, first material side **41** may include first elastic fabric **51** and second elastic fabric **52** extending therefrom first material side **41** to form first fabric edge **61**, wherein first fabric edge **61** may be sealed, affixed, such as sewn **71** together via single or multiple stitch, hemmed, glued, ties, braids, heated, heat pressed, stapled, snapped, hook and loop, taped, or otherwise attached to hold elastic material **40** therein elastic fabric **50**. Likewise, second material side **42** may include first elastic fabric **51** and second elastic fabric **52** extending therefrom second material side **42** to form second fabric layer edge **62**, wherein second fabric layer edge **62** may be sealed, affixed, such as sewn **72** together via single or multiple stitch, hemmed, glued, ties, braids, heated, heat pressed, stapled, snapped, hook and loop, taped, or otherwise attached to hold elastic material **40** therein elastic fabric **50**.

In one embodiment, first fabric edge **61** and second fabric edge **62** may be sealed, affixed, such as sewn **73** together via single or multiple stitch, hemmed, glued, ties, braids, heated, heat pressed, stapled, snapped, hook and loop, taped, or otherwise attached to form

multi-directional stretch elastic fabric **50** in combination or integral thereto elastic material **40** as a cylinder, sleeve shaped, or tube, tubular shaped, or open ended tube having diameter **30**, or other shape to encompass a body part or section of a limb, such as an ankle, knee, wrist, elbow, or other body part.

Elastic fabric **50** is preferably formed from multi-directional stretch material or compression fabric or other suitable materials such as nylon, synthetic fiber, polymer, Spandex, or the like, that can be utilized, provided such material has sufficient hot/cold absorption and transfer capability and/or multi-directional stretch elastic material capable of being formed as a layer, cylinder, or other shape to encompass a body part or section of a limb, such as an ankle, knee, wrist, elbow, or other body part, and with durability or antimicrobial as would meet the purpose described herein.

Referring now to **FIG. 3** there is illustrated an exemplary embodiment of one or more cryotherapy and compression sleeve **10** positioned thereon a user **U**. In use, cryotherapy and compression sleeve **10.1** may be fitted or positioned over user **U** left or right hand **H** as a hand sleeve, cryotherapy and compression sleeve **10.2** may be fitted or positioned over user **U** left or right

forearm **F** (hand **H**, wrist **W**, and/or forearm **F**) as an arm sleeve, cryotherapy and compression sleeve **10.3** may be fitted or positioned over user **U** left or right elbow **E** as an elbow sleeve, cryotherapy and compression sleeve **10.4** may be fitted or positioned over user **U** left or right shoulder **S** as a shoulder sleeve, cryotherapy and compression sleeve **10.5** may be fitted or positioned over user **U** left or right foot **Ft** as a foot sleeve, cryotherapy and compression sleeve **10.6** may be fitted or positioned over user **U** left or right ankle **A** as an ankle sleeve, cryotherapy and compression sleeve **10.7** may be fitted or positioned over user **U** left or right shin **Sh**, cryotherapy and compression sleeve **10.8** may be fitted or positioned over user **U** left or right knee **K** as a knee sleeve, cryotherapy and compression sleeve **10.9** may be fitted or positioned over user **U** left or right thigh **T** as a thigh sleeve, or fitted or positioned over any other combination of user **U** body parts or section of a limb, or other body part. To position cryotherapy and compression sleeve **10** thereon user **U** body parts or section of a limb, or other body part user **U** must position a hand **H** or foot **Ft** therein first sleeve opening **21** and pull first sleeve edge **28** and insert user **U** body parts or section of a limb therein sleeve body **20** to position sleeve body **20** thereon user **U** body parts or section of a limb, or other body part user **U**, and held in place by size of diameter **30**

relative to user **U** and elastic fabric **50** in combination or integral thereto elastic material **40** without use of any attachments, clasps or the like.

Referring now to **FIG. 4** there is illustrated an exemplary embodiment of a mold tray utilized to form elastic material **40**. Pre elastic material **40** solution or mixture may be poured into a mold or form, such as tray **48** to cure a planar section of one or more elastic material **40**. Once cured or predominantly cured may be removed from tray **48** for assembly as cryotherapy and compression sleeve **10**.

Referring now to **FIG. 5** there is illustrated an exemplary embodiment of assembly of cryotherapy and compression sleeve **10**. Cured, partially, or predominantly cured elastic material **40** may be positioned thereon first section of elastic fabric **50**, and more specifically first material surface **44** may be positioned thereon first elastic fabric **51**. Next, second section (or folded section shown) of elastic fabric **50** may be positioned thereon elastic material **40**, and more specifically second elastic fabric **52** may be positioned thereon second material surface **46**. Next, pressure **P** is applied to compress together second elastic fabric **52**, elastic material **40**, and first elastic fabric **51** to form

the base components of cryotherapy and compression sleeve **10**. Preferably, elastic fabric **52**, elastic material **40**, and first elastic fabric **51** bond, affix, or attach together due to the sticky, tacky, or tackiness of uncured or partially uncured elastic material **40**. It is contemplated herein that elastic fabric **52**, elastic material **40**, and first elastic fabric **51** may bond, affix, or attach together via single or multiple stitch, hemmed, glued, ties, braids, heated, heat pressed, stapled, snapped, hook and loop, taped, or otherwise be attached to configure or shape cryotherapy and compression sleeve **10** or sleeve body **20** in the form of a flat two dimension plane, tube or cylinder. Next first elastic fabric **51** and second elastic fabric **52** may be sewn **71** around perimeter edge **70** via single or multiple stitch, hemmed, glued, ties, braids, heated, heat pressed, stapled, snapped, hook and loop, taped, or otherwise be attached to hold elastic material **40** therein elastic fabric **50**. Next first elastic fabric **51** and second elastic fabric **52** may be sewn **72** around perimeter edge **70** via single or multiple stitch, hemmed, glued, ties, braids, heated, heat pressed, stapled, snapped, hook and loop, taped, or otherwise be attached to hold elastic material **40** therein elastic fabric **50**. Next first elastic fabric **51** and second elastic fabric **52** may be sewn **74** around perimeter edge **70** via single or multiple stitch, hemmed, glued,

ties, braids, heated, heat pressed, stapled, snapped, hook and loop, taped, or otherwise be attached to hold elastic material **40** therein elastic fabric **50**. It is contemplated herein that first elastic fabric **51** and second elastic fabric **52** may be sewn or otherwise attached on one or more or all sides to hold elastic material **40** therein elastic fabric **50**.

Referring now to **FIG. 6** there is illustrated a flow diagram **600** of a method of making and using cryotherapy and compression sleeve **10** having primary elements of elastic fabric **50** in combination or integral thereto elastic material **40** shown in **FIGS. 1-5**. In block or step **610**, forming a planar or tubular or cylindrical section of one or more elastic material **40** in a mold or form, such as tray **48**. In block or step **615A**, positioning elastic material **40** thereon elastic fabric **50**, and more specifically first material surface **44** may be positioned thereon or affixed thereto first elastic fabric **51**. In block or step **615B**, positioning elastic fabric **50** thereon or folding thereover elastic material **40** and more specifically first material surface **44** may be positioned thereon or affixed thereto second elastic fabric **52**. In block or step **620**, pressing **P** or affixing second elastic fabric **52**, elastic material **40**, and first elastic fabric **51** together to form the base components of cryotherapy

and compression sleeve **10**. In block or step **625**, affixing or sealing first elastic fabric **51** and second elastic fabric **52** around perimeter edge **70** to hold elastic material **40** therein. In block or step **630**, affixing first fabric edge **61** and second fabric edge **62** to form multi-directional stretch elastic fabric **50** in combination or integral thereto elastic material **40** as a cylinder, sleeve shaped, or tube, tubular shape, or open ended tube having diameter **30**, or other shape (or cryotherapy and compression sleeve **10**) to encompass user's **U** body part or section of a limb, such as an ankle, knee, wrist, elbow, or other body part. In block or step **635** exposing cryotherapy and compression sleeve **10** to a cold or hot temperature environment, such as freezer or microwave for a duration necessary to bring cryotherapy and compression sleeve **10** to the cold or hot temperature. In block or step **640**, positioning or fitting user **U** body part or section of a limb, or other body part therethrough first sleeve opening **21** and second sleeve opening **22** of cryotherapy and compression sleeve **10**. In block or step **645**, transferring the hot or cold temperature thereto encompass user's **U** body part or section of a limb and combination compression of user's **U** body part or section of a limb.

The foregoing description and drawings comprise illustrative embodiments of the present invention. Having thus described exemplary embodiments, it should be noted by those ordinarily skilled in the art that the within disclosures are exemplary only, and that various other alternatives, adaptations, and modifications may be made within the scope of the present invention. Merely listing or numbering the steps of a method in a certain order does not constitute any limitation on the order of the steps of that method. Many modifications and other embodiments of the invention will come to mind to one ordinarily skilled in the art to which this invention pertains having the benefit of the teachings presented in the foregoing descriptions and the associated drawings. Although specific terms may be employed herein, they are used in a generic and descriptive sense only and not for purposes of limitation. Moreover, the present invention has been described in detail; it should be understood that various changes, substitutions and alterations can be made thereto without departing from the spirit and scope of the invention as defined by the appended claims. Accordingly, the present invention is not limited to the specific embodiments illustrated herein, but is limited only by the following claims.

**WHAT IS CLAIMED IS:**

1. An apparatus for wrapping a body part, said apparatus comprising:

an elastic material formed as a layer and having a first surface and a second surface, said elastic material configured for hot or cold temperature transfer and compression thereof the body part; and

an elastic fabric adhered to said first surface and said second surface of said elastic material, said elastic fabric configured to provide a protective cover for said first surface and a liner for said second surface.

2. The apparatus of Claim 1, wherein said elastic material is configured in a sleeve shape.

3. The apparatus of Claim 1, wherein said elastic material is configured in a tubular shape.

4. The apparatus of Claim 3, wherein said elastic material is tapered.

5. The apparatus of Claim 3, wherein said elastic material is configured having a first sleeve opening and a second sleeve opening.

6. The apparatus of Claim 5, wherein said first sleeve opening is configured having a first sleeve opening diameter greater than a second sleeve opening diameter of said second sleeve opening.

7. The apparatus of Claim 6, wherein said elastic material is tapered from said first sleeve opening to said second sleeve opening.

8. The apparatus of Claim 1, wherein said elastic material further comprises one or more material sides having a perimeter edge.

9. The apparatus of Claim 8, wherein said perimeter edge may be sealed.

10. The apparatus of Claim 8, wherein said elastic material is configured in a tubular shape.

11. The apparatus of Claim 10, wherein said elastic material is tapered.

12. The apparatus of Claim 8, wherein said elastic fabric further comprises one or more fabric sides configured having at least one fabric edge.

13. The apparatus of Claim 12, wherein said at least one fabric edge may be sealed.

14. The apparatus of Claim 13, wherein said seal is sewn.

15. The apparatus of Claim 12, wherein said at least one fabric edge further comprises a first fabric edge and second fabric edge.

16. The apparatus of Claim 12, wherein said first fabric edge and said second fabric edge may be sealed to form a tubular shape.

17. The apparatus of Claim 16, wherein said seal is sewn.

18. The apparatus of Claim 16, wherein said tubular shape is tapered.

19. A method of utilizing a hot or cold temperature transfer and compression sleeve to wrap a user's body part therein, said method comprising the steps of:

forming an elastic material in a mold and having a first surface and a second surface, said elastic material configured for hot or cold temperature transfer and compression thereof the body part;

positioning said elastic material thereon an elastic fabric having a first elastic fabric and a second elastic fabric, said first elastic fabric adhered to said first surface and said second elastic fabric adhered to said second surface of said elastic material, said elastic fabric configured to provide a protective cover for said first surface and a liner for said second surface;

pressing said elastic fabric thereto said elastic material;

sealing first elastic fabric thereto said second elastic fabric to hold said elastic material therein;

affixing a first fabric edge of said first elastic fabric thereto a second fabric edge of said second elastic fabric to form an open ended tube.

20. The method of Claim 19, further comprising the step of exposing said hot or cold temperature transfer and compression sleeve to a cold or a hot temperature environment.

21. The method of Claim 20, fitting the user's body part therethrough said open ended tube.

22. The method of Claim 21, wherein the user's body part further comprises a knee.

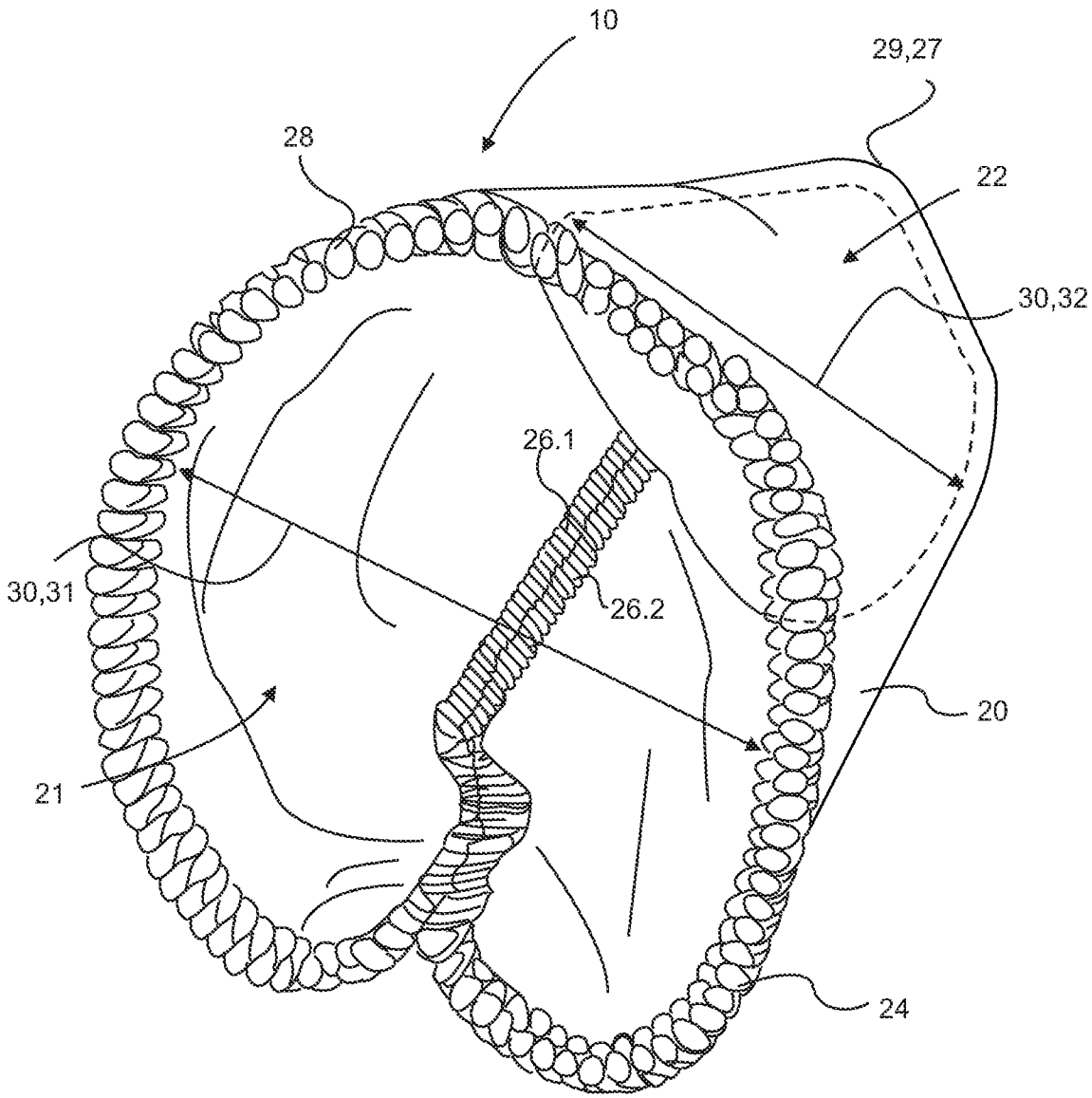



Fig. 1

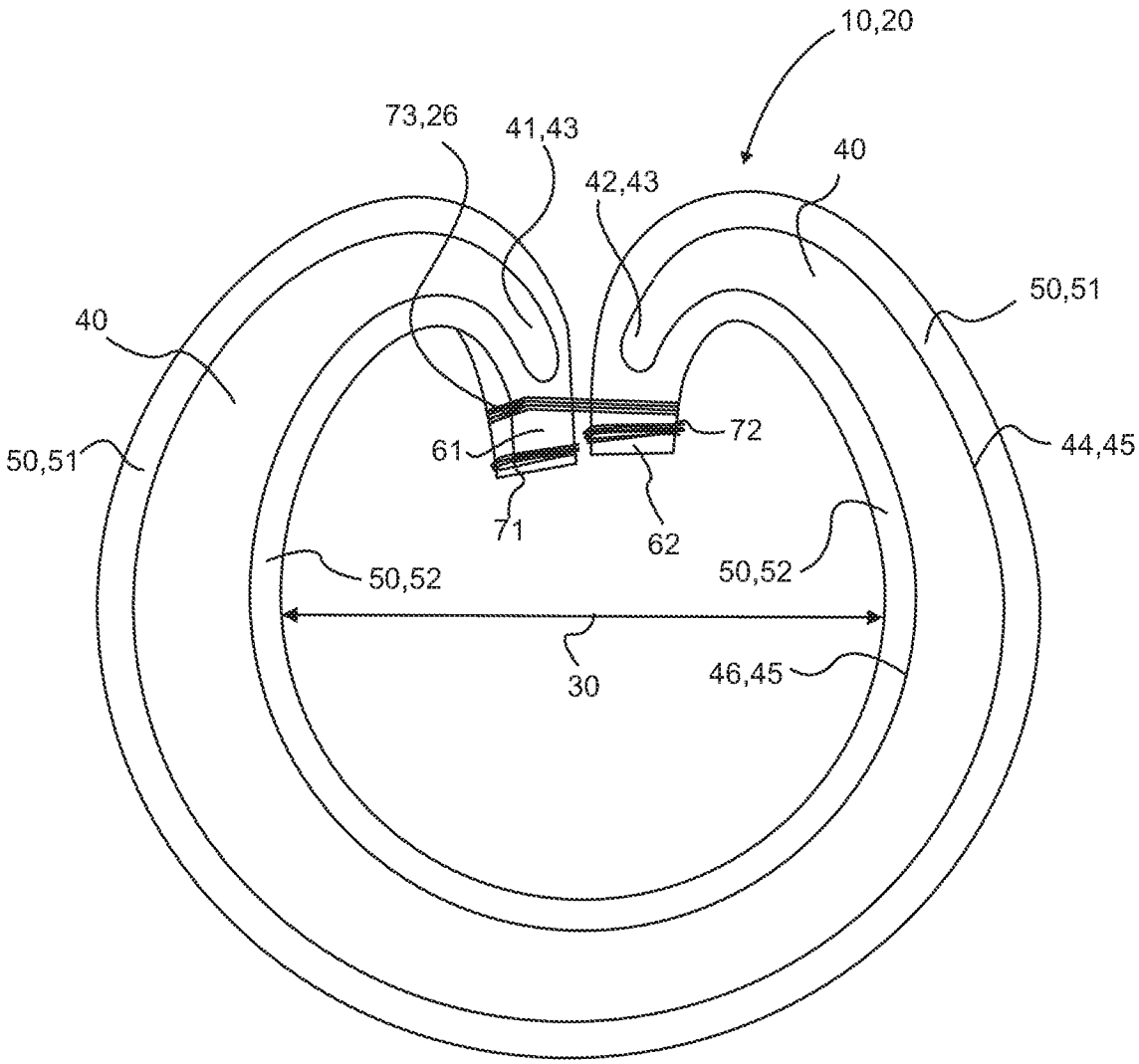

10,20
73,26
41,43
42,43
40
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50,51
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50,52
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46,45

Fig. 2

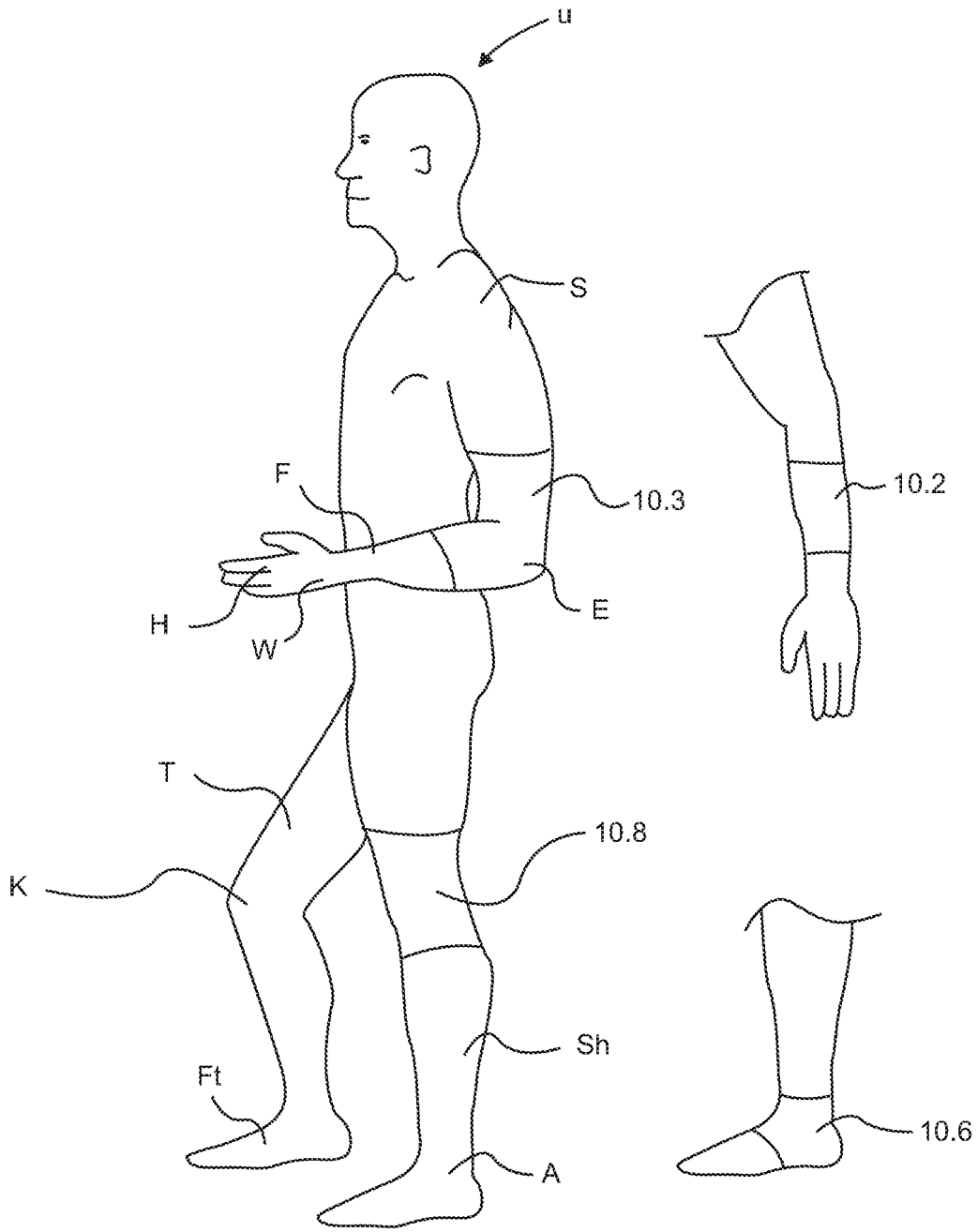



Fig. 3

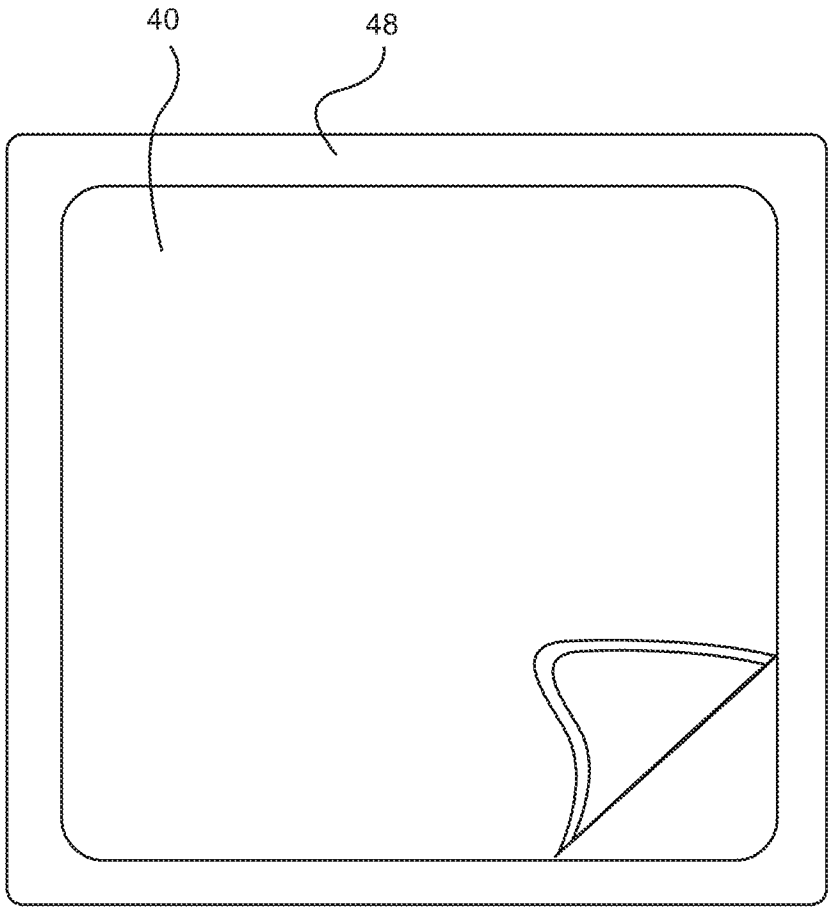



Fig. 4

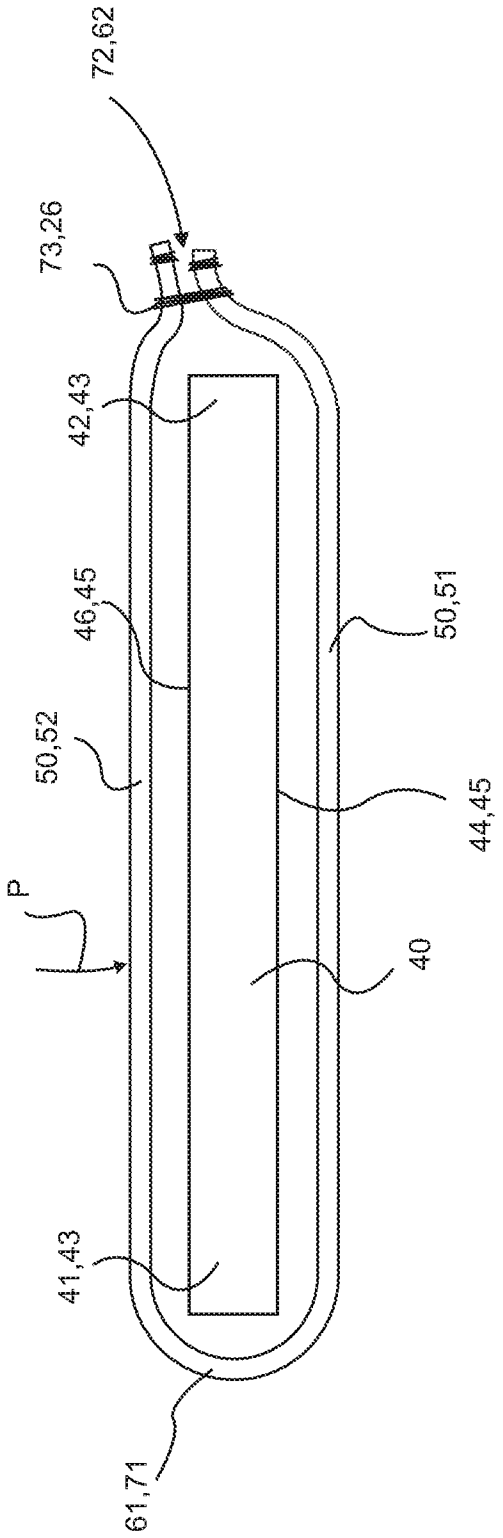



Fig. 5

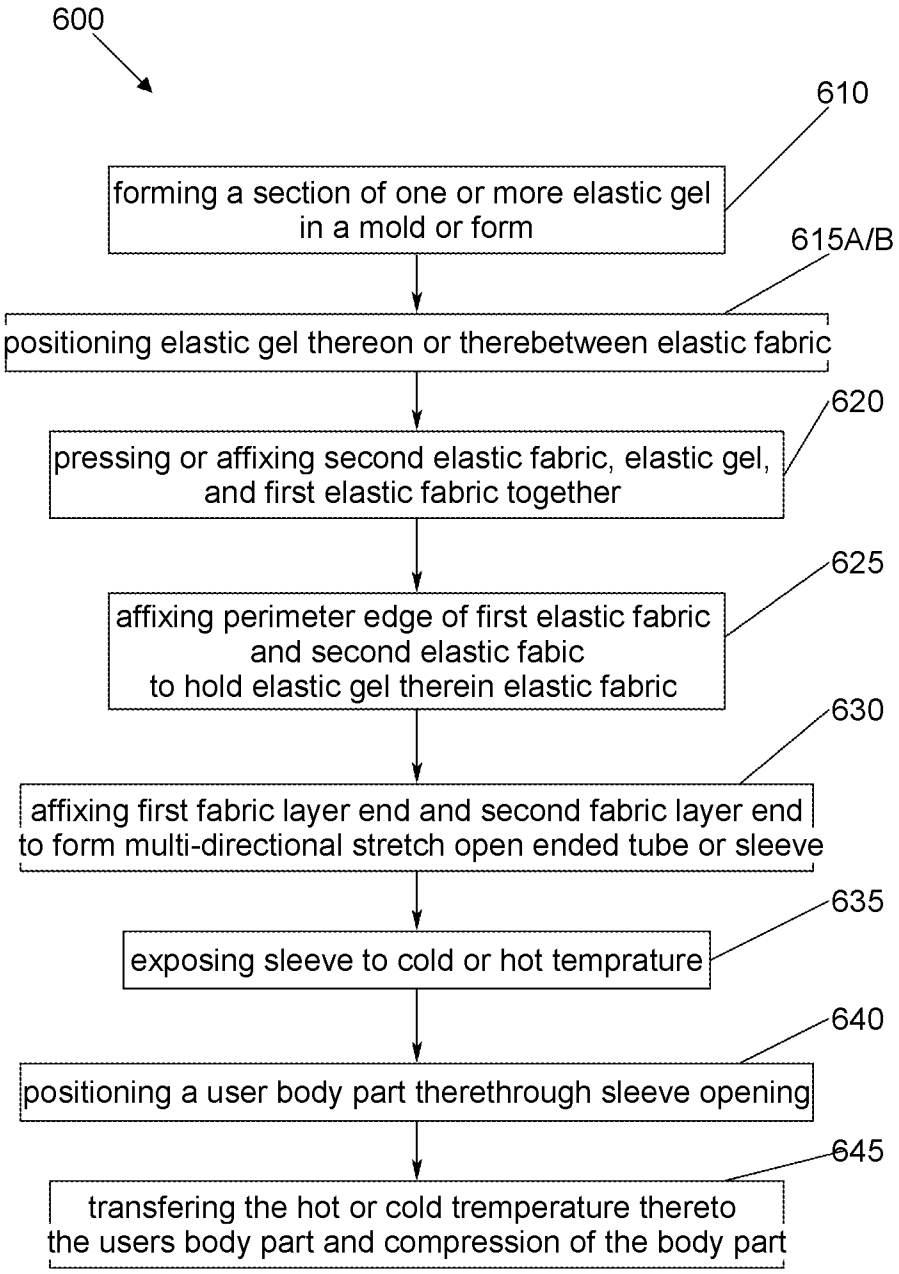

600
610
forming a section of one or more elastic gel in a mold or form
615A/B
positioning elastic gel thereon or therebetween elastic fabric
620
pressing or affixing second elastic fabric, elastic gel, and first elastic fabric together
625
affixing perimeter edge of first elastic fabric and second elastic fabic to hold elastic gel therein elastic fabric
630
affixing first fabric layer end and second fabric layer end to form multi-directional stretch open ended tube or sleeve
635
exposing sleeve to cold or hot temprature
640
positioning a user body part therethrough sleeve opening
645
transfering the hot or cold tremperature thereto the users body part and compression of the body part

FIG. 6

# INTERNATIONAL SEARCH REPORT

International application No.
PCT/US16/44930

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A61F7/00, A61F7/02, A61F13/06 (2016.01)
CPC - A61F7/00, A61F7/02, A61F5/0109
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(8): A61F7/00, A61F7/02, A61F7/03, A61F13/06 (2016.01); CPC: A61F7/00, A61F7/02, A61F2007/0225, A61F2007/0244, A61F2007/0246, A61F2007/0279, A61F2007/0295, A61F2007/0042, A61F5/0109, A61F2013/00204, A61F2013/00187

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PatSeer (US, EP, WO, JP, DE, GB, CN, FR, KR, ES, AU, IN, CA, INPADOC Data); PubMed; EBSCO; Google/Google Scholar; KEYWORDS: compress*, pressur*, elastic*, flex*, sleeve, wrap*, bandage, warm*, heat*, cool*, hot, cold, temperature, thermal, transfer*, radiat*, emit*, stretch*, fabric, cloth, bond*, adher*, mold*, taper*, cryogenic, therapy, cryotherapy

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | US 5,080,089 A (MASON, J et al.) 14 January 1992; figures 1-2; column 2, lines 17-54; column 3, lines 22-32 | 1-3, 5-6, 8-10, 12-13, 15 |
| Y | | 4, 7, 11, 14, 16-18 |
| Y | US 2011/0098792 A1 (LOWE, M et al.) 28 April 2011; figures 1-3, 6, 8-9b; paragraphs 79-80, 85, 88, 98 | 4, 7, 11, 14 |
| Y | US 4,961,418 A (MCLAURIN-SMITH, M) 9 October 1990; figures 2, 5-7; column 3, lines 43-59; column 4, lines 9-20, 33-38, 42-64; column 5, lines 9-20; column 6, lines 2-5 | 16-22 |
| Y | US 2005/0124925 A1 (SCHERPENBORG, Y) 9 June 2005; figure 4; paragraphs 31-33, 37-38 | 19-22 |
| A | US 2014/0276258 A1 (HALL, J) 18 September 2014; entire document | 1-22 |
| A | US 5,172,689 A (WRIGHT, C) 22 December 1992; entire document | 1-22 |

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

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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 27 September 2016 (27.09.2016) | 17 OCT 2016 |
| Name and mailing address of the ISA/<br>Mail Stop PCT, Attn: ISA/US, Commissioner for Patents<br>P.O. Box 1450, Alexandria, Virginia 22313-1450<br>Facsimile No. 571-273-8300 | Authorized officer<br>Shane Thomas<br>PCT Helpdesk: 571-272-4300<br>PCT OSP: 571-272-7774 |

Form PCT/ISA/210 (second sheet) (January 2015)