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(56) Documents Cited
GB 2178665 A **GB 1178916 A** **GB 0475811 A**
EP 0279684 A2 **US 3905367 A** **US 3861364 A**

(58) Field of Search
UK CL (Edition N) **A5R REHT REQ**
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(54) Water therapy appliance

(57) A water therapy alliance for treatment of for example muscle complaints, comprising a jacket incorporating a water pressure jet conduit system (2, 5) to enable heat/pressure to be applied via a heat/pressure transfer layer (7) to sensitive body areas to alleviate suffering and to reduce the necessity of sufferers to be subjected to the inconvenience of using a hydrotherapy pool.

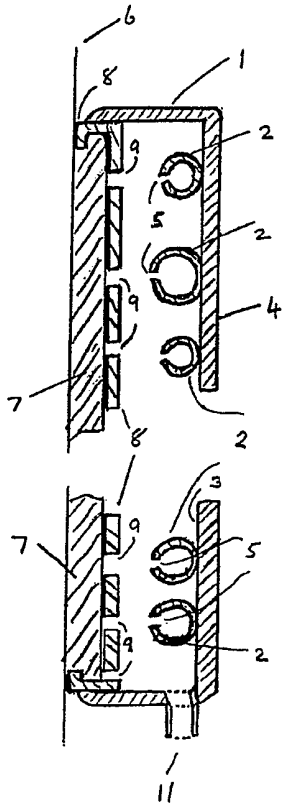

Figure 1

GB 2 284 352 A

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1990.

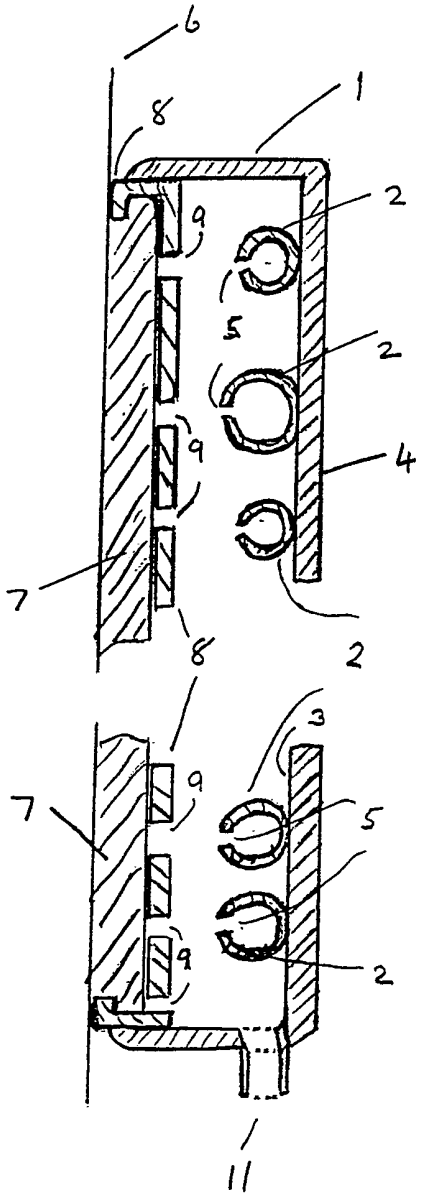

Figure. 1

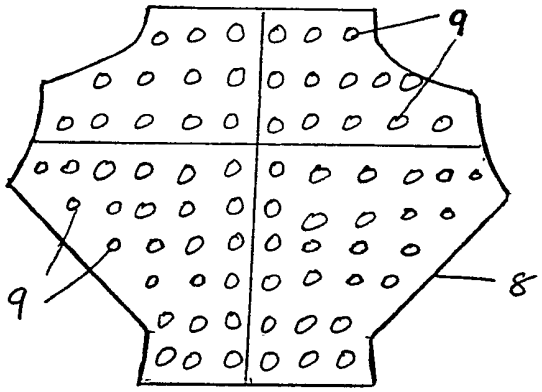

Figure 2

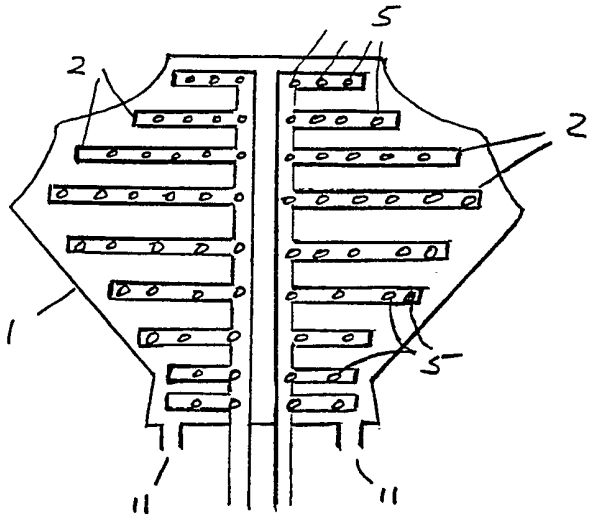

Figure. 3

WATER THERAPY APPLIANCE

This invention relates to a water therapy appliance and in particular to a garment or part of a garment suitable for attaching to the body or part of the body of a person to enable water massage to be applied to the body or part thereof.

Hydrotherapy pools or baths exist which enable a person to benefit from the effect of warm/hot water applied often in jet form to the surface of the body which can give relief to stiff and/or aching limbs or joints. Invariably almost total immersion is required to give maximum benefit to the person, thus using a large volume of water which also has to be heated to a given temperature and maintained at this temperature. Although a hydrotherapy pool does require a large amount of heated water it does possess the advantage of permitting an afflicted person to exercise limbs in a manner which otherwise would not be possible and in some cases even to attempt swimming movements. However some sufferers of severely restricted limb movements (eg arthritic sufferers) experience difficulty in even moving from a chair to a car to be taken to a hydrotherapy pool for such therapy treatment.

According to the invention there is provided an appliance for attachment to the body or part of the body of a person which comprises a housing having water inlet and outlet means, a surface for the housing which in use is in

contact with the body comprising a heat and/or pressure transfer element and water conduit means within the housing having an orifice or orifices to permit, in use, water to be directable onto the heat transfer element.

The housing may be in the form of a jacket to be worn by a person where for example water therapy treatment is to be applied to the trunk of the body. Such a jacket is of immediate advantage in particular for the more general use of water therapy in the treatment of back pains or muscular disorders.

Other than the surface in contact with the body. which comprises the heat and/or pressure transfer element. the housing will comprise waterproof material of sufficient strength to carry water conduit means secured thereto internally of the housing. The housing may itself comprise a rigid material which will provide a frame element of substantial strength to permit water flow/jet flow of varying rates to be used enabling water jet pressures of significant levels to be applied to the body.

The water conduit means comprises tubing eg of rubber or synthetic material which may be stiff, semi-stiff or flexible in nature. The bore of the tubing will be governed by the rate of flow of water required through the orifice(s) located in the tubing on the side thereof to be positioned in use facing the body. The orifices may be simple apertures in the tubing or jet nozzles inserted fixedly or detachably into the orifices in the wall of the tubing.

The water conduit tubing will be detachably or fixedly secured to the inside surface of the housing and will be arranged in a configuration best adapted to the contour/area of the body of the person to which the housing is to be attached. That is, for a jacket housing to be used for the back of a person the conduit/tubing will have a configuration such as to concentrate the tubing runs, and therefore the jet orifices, in the areas of the back of higher muscle concentration particularly those areas which suffer common muscle ailments and which thus would benefit most from hot water/water jet massage therapy.

The housing may provide for more than one run of tubing that is comprising two or more water inlets or one main inlet sub-dividing into as many sub inlets as there are tubing runs.

The surface of the housing in contact with the body that is the heat and/or pressure transfer element may comprise a thin strong flexible waterproof membrane which permits maximum transfer effect of the water jet pressure and/or temperature to the body of the person which it is in use in contact. The transfer element may also comprise a layer of material which is of a honeycomb/foam nature. Such material has the property of insulating and immediately storing the heat radiated from the body and also absorbing the warm water jet impacting upon it and allowing controlled access of the warm water to the body surface. This arrangement provides more of a water jet massage than a water jet needle/rod impact effect which may be more appropriate (ie soothing) to a more acute sufferer of painful muscle ailments.

The transfer element will be securely affixed at its edges to the contiguous edges of the housing in a continuous watertight sealing manner by conventional methods of sealing.

Where the transfer element is of a porous foam/absorbent material the skin of a person under treatment will become wet and water will run naturally down the surface of the skin to the lower end of the housing. Where the housing is a jacket the lower end of the jacket may be fashioned, where it is of a pliable material, by the use of, for example, a draw string to tightly secure the lower edge of the jacket to the persons body reducing water loss externally to a minimum.

In normal operation of such an appliance the used or impacted water will descend to the lower half of the housing and leave by an outlet port which is in turn connected to a water reservoir for returning it via a pump system to the inlet to the housing.

The water reservoir will be provided with a heater, preferably thermostatically controlled and a conventional electrically operated pump (eg a rotary impeller pump) would be used to transfer water from the housing and in so doing also provide the water pressure required to cause the water to exit from the tubing orifices and impact on to the persons body to give a predetermined pressure jet effect.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawing in which :

Figure 1 shows in vertical section an outline sketch of the basic elements of a water therapy jacket in accordance with the invention.

Figure 2 shows a front elevation of a heat and/or pressure transfer element.

Figure 3 shows a water therapy jacket housing with the water supply conduit attached thereto.

Figure 1 shows in vertical section a housing 1 having water supply tubing 2 attached to the inner surface 3 of one wall 4 of housing 1. Orifices 5 in the tubing 2 are located to direct in use water towards the surface 6 of the body (back) of a person to which the jacket is in use attached. Positioned between the housing 1 and the body surface 6 is a layer of foamed or cellular plastics material 7 which itself is attached on the side adjacent the housing 1 to an impermeable layer of material 8. The layer 8 is attached at its boundary edges to the housing 1. The two layers 7 and 8 comprise the heat and/or pressure transfer element conveying the heat and pressure effect of the water issuing in jet form from tubing 2 via orifices 5. Apertures 9 exist in the material layer 8 each in corresponding location with an orifice 5 in the tubing 2 enabling an uninterrupted jet of water to impinge upon the cellular material layer 7.

Figure 2 shows the impermeable material layer 8 with apertures 9 located therein.

Figure 3 shows housing 1 with a water supply tubing network 2 attached thereto. The tubing network 2 has a configuration to offer optimum cover for the back of a person to be treated particularly with reference to the typical muscle distribution of a person. Orifices 5 in the tubing are located such as to be in positional co-operation with the apertures 9 located in material layer 8. Two inlet tubes 10 convey water into the tubing network 2 and two outlet ports 11 serve to drain water way from the housing 1. The drained water can be conveyed to a reheating container (not shown) for re-use ie return to the housing 1.

CLAIMS

1. An appliance for attachment to the body or part of the body of a person which comprises a housing having liquid inlet and outlet means, a surface of the housing which surface in use is in contact with the body comprising a heat and/or pressure transfer element and liquid conduit means within the housing having an orifice or orifices to permit in use liquid to be directable onto the heat and/or pressure transfer element.

2. An appliance as claimed in claim 1 wherein the housing is in the form of a jacket to be worn by a person requiring heat and/or pressure treatment to be applied to the trunk of said person.

3. An appliance as claimed in claims 1 and 2 wherein the liquid employed in said appliance is water.

4. An appliance as claimed in any one of claims 1 to 3 wherein other than the housing surface in contact with the body the housing comprises waterproof material of strength sufficient to enable water conduit means to be secured thereto internally of the housing.

5. An appliance as claimed in claim 4 wherein said housing material comprises a rigid material of strength sufficient to provide a structure enabling water jet pressures of significant levels to be applied to the body of a person to whom the appliance is attached.

6. An appliance as claimed in any one of claims 1 to 5 in which the liquid conduit means comprises tubing of rubber or synthetic material.

7. An appliance as claimed in claim 6 in which the tubing is stiff or flexible in nature.

8. An appliance as claimed on any one of claims 1 to 7 in which the orifices in the conduits are simple apertures.

9. An appliance as claimed in any one of claims 1 to 7 in which the orifices comprise jet nozzles inserted fixedly or detachably into the wall of the conduit.

10. An appliance as claimed in any one of claims 1 to 9 in which the configuration of the liquid conduit having orifices therein is such as to concentrate the liquid jet heat and/or pressure transfer effect onto those areas of the body to which the appliance is attached where common muscle ailments most occur.

11. An appliance as claimed in any one of claims 1 to 10 in which the liquid conduit comprises a multi-conduit network system.

12. An appliance as claimed in any one of claims 1 to 11 in which the heat and/or pressure transfer element comprises a thin strong flexible waterproof material.

13. An appliance as claimed in any one of claims 1 to 12 in which the heat and/or pressure transfer element comprises a layer of material of honeycomb/foamed structure.

14. An appliance as claimed in any one of claims 1 to 13 which is adapted for connection to a liquid reservoir, a pump for transfer of liquid between the reservoir and the appliance and means for heating under thermostatic control the liquid in the reservoir.

15. An appliance substantially as described and illustrated in Figures 1 to 3 of the accompanying drawing.

Patents Act 1977
Examiner's report to the Comptroller under Section 17
(T Search report)

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Relevant Technical Fields

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(ii) Int Cl (Ed.6) A61F 7/00, 7/08, 7/10, A61H 9/00

Search Examiner
J F JENKINS

Date of completion of Search
20 FEBRUARY 1995

Databases (see below)
(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii)

Documents considered relevant following a search in respect of Claims :-
1 - 15

Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages		Relevant to claim(s)
X	GB 2178665 A	(WILLIAMS) see Claims 1 and 2, Figure 2	1, 3, 6 - 8 and 13
A	GB 1178916	(SMIRNOV ET AL)	
A	GB 475811	(HILL)	
X	EP 0279684 A2	(MERLIN) see Figure 5, Column 5 Line 20 to Column 6 Line 18	1, 3 - 10, 12 and 14
X	US 3905367	(DAPCICH) see Claim 2	1, 3, 6 - 8 and 13
X	US 3861364	(GREENFIELD) see Figure 3	1, 3 - 8, 12 and 13

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).