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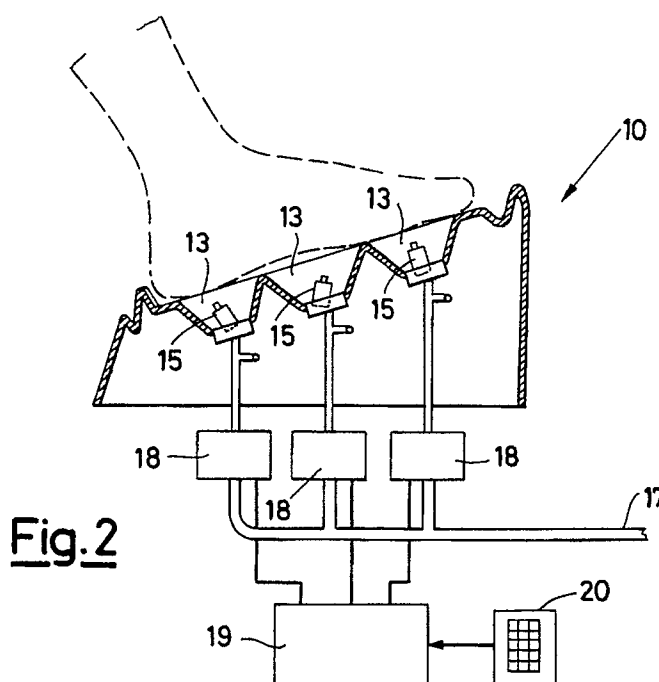
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54 **Plantar hydromassage device.**

57 A device (10) for plantar massage comprises support surfaces (11,12) for the soles of the feet under which are placed nozzles (15,16) for controlled emission of water jets.

In a first embodiment said support surfaces (11,12) are fixed and the jets are modulated to move over the sole and perform massage cycles. In a second embodiment the support surfaces are repre-

sented by idling rollers (122,123) to cause the sole of the feet to slide thereover and perform the massage bringing different areas opposite the jets. In the second embodiment the rollers have advantageously yielding material with roughness performing a further mechanical massage action as the sole of the foot slides thereover.



PLANTAR HYDROMASSAGE DEVICE

The general object of the present invention is to provide a device which would permit controlled emission of water jets on the soles of the feet so as to perform localized massage thereof.

In view of said object it was sought to provide in accordance with the invention a plantar hydromassage device characterized in that it comprises directional emission means of a plurality of water jets among elements which constitute a support surface for the sole of the feet.

In greater detail said means of emission comprise directional nozzles flush-mounted in said support surfaces.

To further clarify the explanation of the innovative principles of the present invention and its advantages compared with the known art there are described below, with the aid of the annexed drawings, possible embodiments as examples of applications of said principles. In the drawings:

FIG. 1 shows a schematic plan view of a first plantar hydromassage device embodied in accordance with the present invention,

FIG. 2 shows a partial cross section along line II-II of FIG. 1

FIG. 3 shows a schematic plan view, with a partial cross-section, of a second plantar hydromassage device embodied in accordance with the present invention, and

FIG. 4 shows a partial cross section view along line IV-IV of FIG. 3

With reference to the figures a plantar hydromassage device applying the innovative principles claimed here and indicated generally by reference number 10 in FIG. 1 comprises inclined top surfaces 11, 12 to support the two feet as shown in broken lines.

The support surfaces comprise, in mirror image, recesses 13, 14 containing directional nozzles 15, 16 connected by a duct 17 to a source of pressurized hot water, e.g. the plumbing system of a bath, by the interposition of electric controls 18 of the known art for controlled regulation of the outward flow from the nozzles 13 and 14. The nozzles 13 and 14 can be connected in pairs involving the same plantar area of both feet so as to have a number of electrical controls half the total number of the nozzles. For example, in the example shown in the drawings each support surface has three nozzles. By pairing the nozzles two by two on said surfaces only three electrical controls may be used.

The electrical controls are controlled by a control device 19, e.g. of the electronic microprocessor type of the known art and therefore, being easy to imagine by those skilled in the art, not further

described. The control device is connected to a control panel 20, e.g. of the keyboard type, for manually setting the desired regulation as will be made clear below.

The hydromassage device operates as follows.

The device is placed on the bottom of a tub or other container for recovery of the water coming from the nozzles, e.g. a shower stall, to avoid splashing during use.

Initially the nozzles 13 and 14 are directed in such a manner that they point toward the areas of the soles of the feet which it is desired to massage. The feet are placed on the surfaces 11 and 12 and emission of water from the nozzles is activated by the control and using the panel 20 of the controller 19 which activates the electrical controls 18.

By means of the control panel 20 it is possible to control the controller 19 so as to regulate the electrical controls 18 to obtain the desired intensity and/or cyclical duration of the emissions from the nozzles connected therewith.

Those skilled in the art can readily imagine how it would be possible by using a microprocessor controller 19 to provide appropriate massage programmes. For example the nozzles can be activated with pulsing, sequentially and cyclically, or with the intensity of the water flow increasing and decreasing alternately etc.

The various programmes can be set directly by the user in accordance with his tastes by means of the control panel 20 or can be prememorized in the controller 19 and recalled upon command by the user by means of the same panel 20.

As an example, with reference to FIGS. 3 and 4, there is described a second possible embodiment applying the innovative principles claimed here. In said second embodiment the plantar massage is provided by the guided movement of the feet on the virtually fixed jets instead of moving the water jets by activation of different nozzles as provided in the first embodiment.

Said second embodiment, which is indicated generally by reference number 110, comprises a base 121 supporting horizontal and parallel idling rollers 122, 123 covered with relatively yielding material such as rubber with radial surface roughness as is shown clearly in FIG. 4 as well.

In the space between the rollers there are placed two directional nozzles 115, 116 fed through a duct 117 from a source of water.

The device 110 also includes advantageously a cover 124, generally in the form of an overturned U hinged at the base 121 by means of side arms 125, 126 so as to be movable from the closed or inoperative position as shown in FIG. 3 (and in

broken lines in FIG. 4) to the open or operative position (shown in solid lines in FIG. 4).

In addition to supplying when closed a protective element for the device, the cover 124 has the function of a shield against splashing during use of the apparatus 110.

To use the device 110 it is sufficient to open the cover and rest the feet on the rollers as shown schematically in FIG. 4 so that each foot is positioned over the respective nozzle 115, 116. Said nozzles can be regulated to provide a jet with the desired inclination and optionally the desired intensity.

Supplying the water through the duct 117 and sliding the soles of the feet over the rollers the various areas thereof are struck by the water jets and massaged in a controlled manner. In addition to the massage effect of the water there is the mechanical massage effect of sliding over the shaped rollers 122 and 123.

Naturally the description of devices applying the innovative principles of the present invention is given as an example of said principles and therefore is not to be considered as limiting the scope of the invention claimed here.

For example, in both embodiments the number of nozzles for each foot can be readily increased so as to better localize and articulate the massage action.

Similarly the number of rollers 122, 123 can be different from that illustrated.

The nozzles 115, 116 can also be equipped with programmable modulation means for the jets as shown for the device 110.

Although in the first embodiment the nozzles have been indicated as controlled in symmetrical pairs on both feet so as to minimize the number of control components, it is naturally conceivable to use an electrical control 18 for each nozzle so as to be able to perform different sequences of massage on the individual feet simultaneously.

Furthermore it would be possible to cover the supporting surfaces 11 and 12 with a grille and form an essentially unbroken supporting surface despite the presence of a large number of recesses 13 and 14 of ample diameter.

To make the devices 10, 110 usable outside the containers for collection of the water sprayed by the nozzles there could be included therein channels for conveyance of said water into an appropriate drain as can be readily imagined by those skilled in the art. Lastly the first embodiment could be equipped with a top cover against spraying similar to the one shown in the second embodiment.

1. Plantar hydromassage device characterized in that it comprises means of directional emission of a plurality of water jets between elements which constitute a supporting surface for the soles of the feet.

2. Device in accordance with claim 1 characterized in that said means of emission comprise directional nozzles flush-mounted in said support surface.

3. Device in accordance with claim 2 characterized in that the directional nozzles are connected hydraulically and electrically controlled for their controlled supply of water under pressure from a source.

4. Device in accordance with claim 3 characterized in that the electrical controls are connected for operation to an electronic control circuit in such a manner as to perform cycles of emission of water from the nozzles with preset intensity and duration.

5. Device in accordance with claim 2 characterized in that the nozzles are positioned in pairs with one nozzle of each pair affecting the same area of the sole of one of the two feet as the area affected by the other nozzle of the pair on the sole of the other foot.

6. Device in accordance with claims 3 and 5 characterized in that the nozzles of each pair are connected hydraulically together and are supplied simultaneously with water by the same electric control.

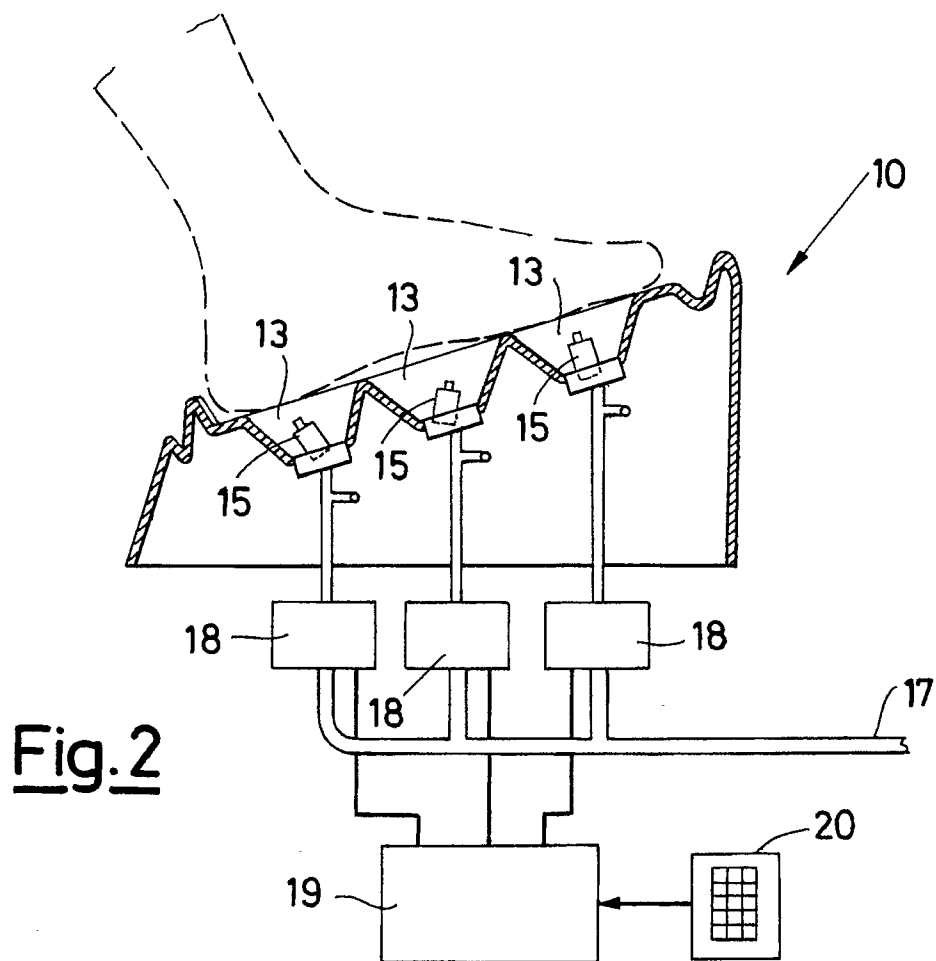
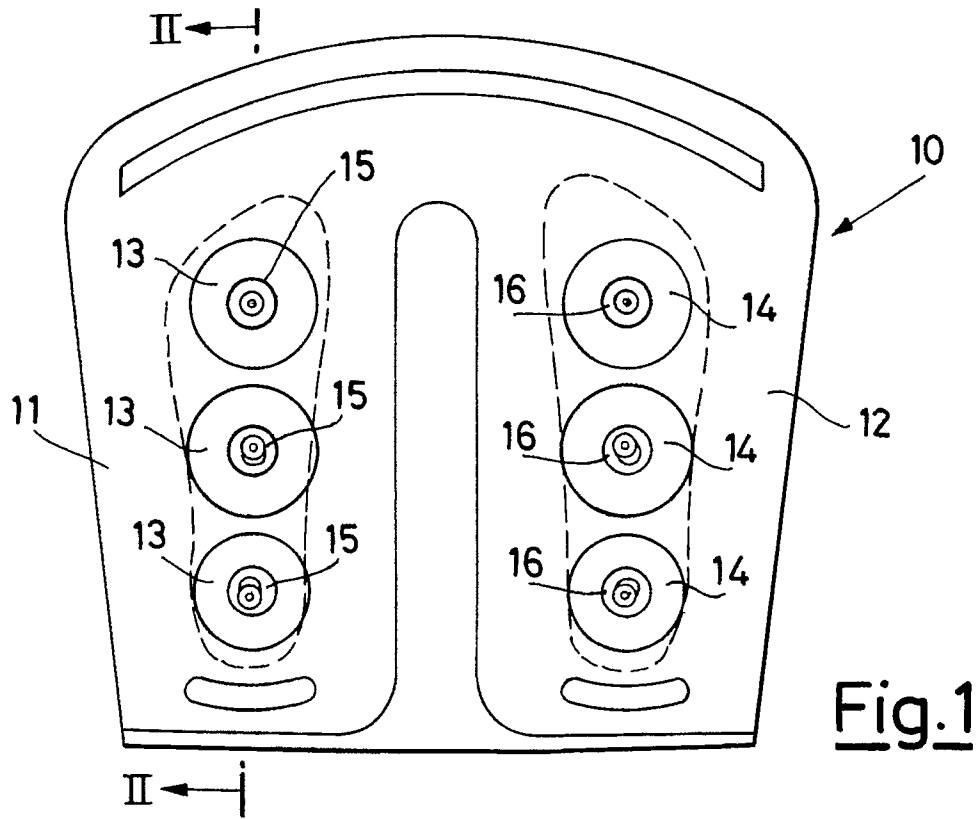
7. Device in accordance with claim 1 characterized in that the supporting elements are fixed planes.

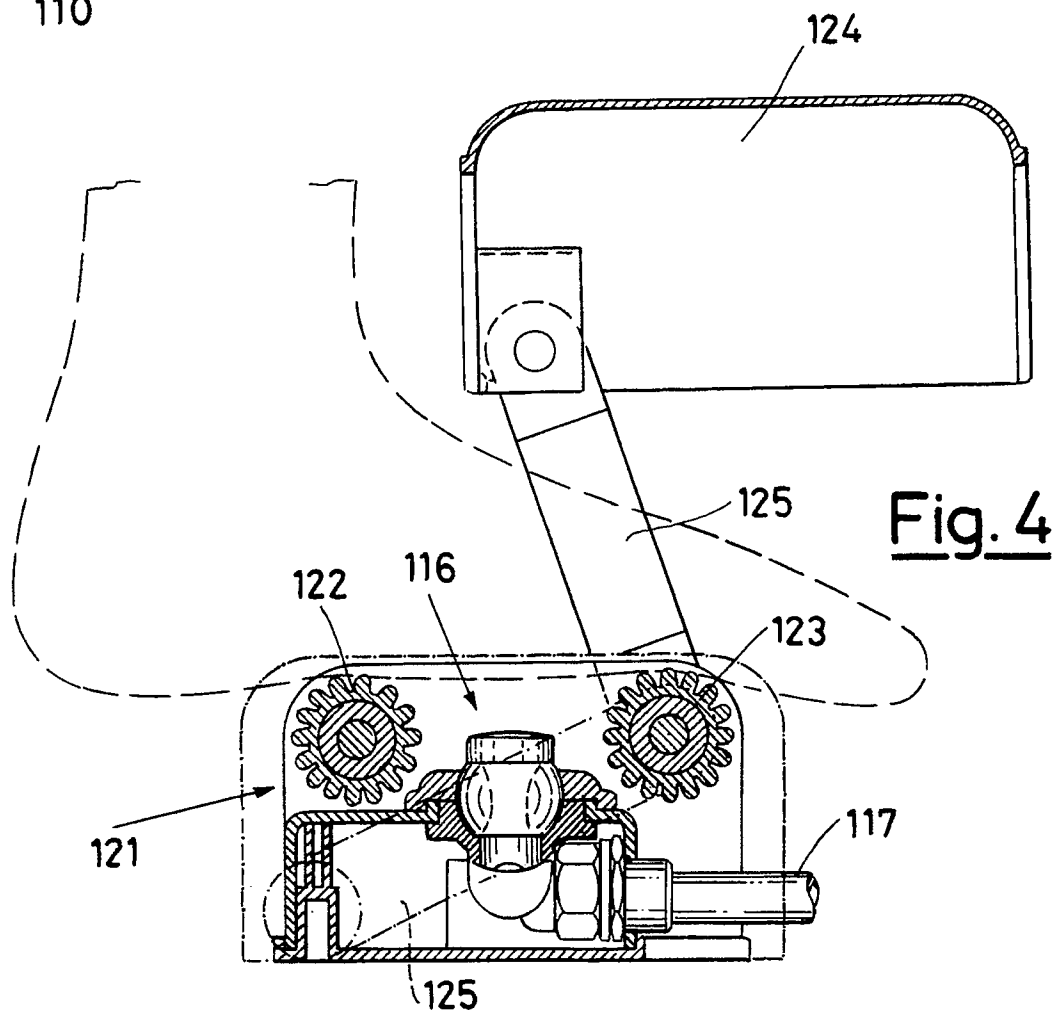
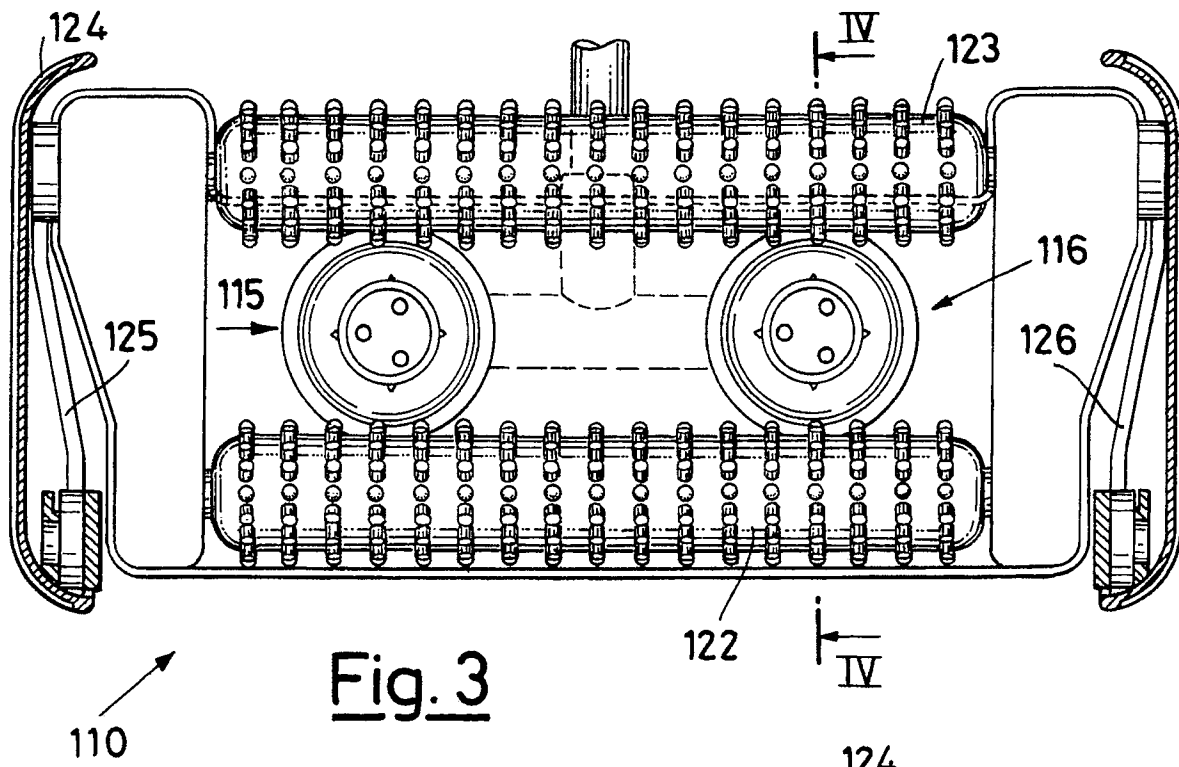
8. Device in accordance with claim 1 characterized in that the supporting elements include rollers arranged horizontally and essentially parallel to rotate freely with the sliding of the soles of the feet on their periphery.

9. Device in accordance with claim 8 characterized in that the periphery of the rollers is covered with relatively yielding material shaped with radial roughness.

10. Device in accordance with claim 1 characterized in that it includes a cover movable between a closed or protective position of the inoperative device and an open position for interception of water splashes coming out of the operative device.

Claims







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EUROPEAN SEARCH REPORT

Application Number

DOCUMENTS CONSIDERED TO BE RELEVANT			EP 90202370.4
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	<u>CH - A5 - 650 667</u> (SCHÄREN) * Abstract; page 2, right-hand column, lines 12-21; fig. 1 *	1, 2, 5, 7,	A 61 H 9/00
A	--	3, 6	
X	<u>DE - A1 - 3 037 435</u> (MATONIA) * Claims 1, 5, 6, 8; page 6, lines 5-23; fig. 3, 4 *	1, 2, 5, 7	
A	--	3, 6,	
X	<u>DE - B -1 927 545</u> (WALBERSDORF) * Fig. 1 *	1, 2	
X	<u>GB - A - 2 139 885</u> (ROLANDO) * Abstract; fig. 3, 4 *	1, 2, 5, 7	
A	--	3, 6, 10	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
X	<u>US - A - 3 837 334</u> (JOHNSON) * Abstract; fig. 2 *	1, 2, 5, 8	A 61 H
A	--	3, 6	
A	<u>CH - A5 - 607 580</u> (WIDMER) * Abstract; fig. 1, 3, 4 *	1, 8, 9	
A	<u>EP - A2 - 0 066 555</u> (MODOLO) * Abstract; fig. *	1, 8, 9	
A	<u>US - A - 3 359 572</u> (BLACKWELL) * Fig. 1-3 *	1, 8, 9	
A	<u>FR - A3 - 2 610 518</u>	1-4, 7	
The present search report has been drawn up for all claims			
Place of search VIENNA		Date of completion of the search 08-01-1991	Examiner NEGWER
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		I : 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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EUROPEAN SEARCH REPORT

Application Number

-2-

EP 90202370.4

DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
A	(JAEGER) * Abstract; page 2, lines 12-31; page 3, lines 12-30; fig. 1,2 * -- <u>US - A - 4 669 453</u> (ATKINSON) * Abstract; fig. 1-4B * --	1-4
A	<u>US - A - 4 192 297</u> (LABRECQUE) * Abstract; fig. 1,4,8 * ----	1,2,10
The present search report has been drawn up for all claims		
Place of search	Date of completion of the search	Examiner
VIENNA	08-01-1991	NEGWER
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		

EP FORM 1501 (01/92) (P0401)

TECHNICAL FIELDS
SEARCHED (Int. Cl.5)