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(54) **Internal cartridge for shower heads**

(57) An internal cartridge (1) for shower heads, comprising a first plate-like element (2) provided with a plurality of holes (3) that are adapted to allow the passage of water and to accommodate one nozzle (9) each, and

a second plate-like element (4), which is adapted to be coupled to the first plate-like element (2) and to be connected to a water supply pipe, the first plate-like element (2) being made of plastic material.

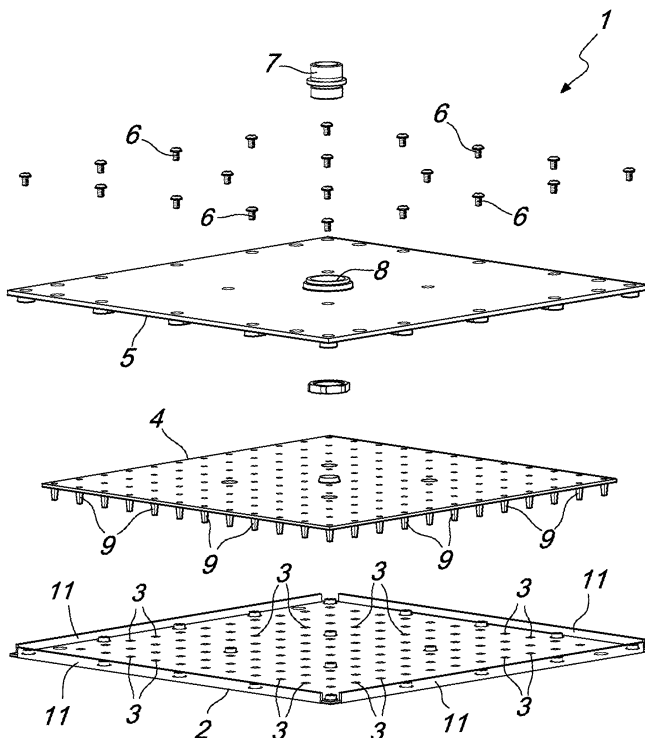


Fig. 1

Description

[0001] The present invention relates to an internal cartridge for shower heads.

[0002] As is known, shower heads having for example a square or circular shape and made entirely or partially of metal, with extremely high production costs, are commercially available.

[0003] Moreover, an extremely low thickness of some plate-like components of structures of internal cartridges of known shower heads entails excessively low stiffness thereof.

[0004] The aim of the present invention is to provide an internal cartridge for shower heads that has an extremely low thickness and at the same time is made of materials that are alternative to metal and therefore at a low cost.

[0005] Within this aim, an object of the present invention is to provide an internal cartridge for shower heads that has a low weight with respect to known types of shower head cartridges.

[0006] Another object of the present invention is to provide an internal cartridge for shower heads that is highly reliable, relatively simple to provide and at competitive costs.

[0007] This aim, as well as these and other objects that will become better apparent hereinafter, are achieved by an internal cartridge for shower heads, comprising a first plate-like element provided with a plurality of holes that are adapted to allow the passage of water, said holes being adapted to accommodate one nozzle each, and a second plate-like element, which is adapted to be coupled to said first plate-like element and to be connected to a water supply pipe, **characterized in that** said first plate-like element is made of plastic material.

[0008] Further characteristics and advantages of the invention will become better apparent from the description of preferred but not exclusive embodiments of the cartridge according to the present invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is an exploded perspective view of the cartridge according to the present invention;

Figure 2 is a perspective view of the cartridge according to the present invention;

Figure 3 is a perspective view of an alternative embodiment of the first plate-like element of the cartridge according to the present invention.

[0009] With reference to the figures, the cartridge according to the present invention, generally designated by the reference numeral 1, comprises a first plate-like element 2, which is made of plastic material, for example thermoplastic resins or thermosetting resins, and is provided with a plurality of holes 3 that are adapted to allow the passage of water. Conveniently, the holes 3 accommodate rubber nozzles, or the rubber nozzles are, as

shown in the figures, arranged at a second plate-like element 4, which is adapted to be superimposed fully on the first plate-like element 2.

[0010] In this manner, the plate-like element 4 completely covers the plate-like element 2 and is made for example of rubber or silicone.

[0011] Above the plate-like element 4 there is a covering element 5 made of plastics, for example polypropylene, which is coupled to the plate-like element 2 by means of rivets 6 or any other suitable fixing means.

[0012] Conveniently, the covering element 5 is provided with a coupling 7 to which the pipe that conveys water to the cartridge, and therefore to the head, is connected. Of course, the covering element 5 is provided with a water passage hole 8, around which the coupling 7 is connected. The water therefore passes between the covering element 5 and the plate-like element 4 or the individual nozzles that protrude from the holes 3 of the plate-like element 2.

[0013] The plate-like element 2, being made of plastic material, can have a very low thickness with respect to those made of metal.

[0014] According to the invention, in order to increase the stiffness of the plate-like element 2, there are stiffening elements associated with the plate-like element 2.

[0015] More precisely, the stiffening elements can comprise at least one rib 10 provided on either face of the plate-like element 2 or on both of its faces, or a raised border 11 obtained on the outer perimeter of the plate-like element 2 or also a border that is associated with ribs 10.

[0016] In Figure 1, the nozzles are designated by the reference numerals 9, and in this case are arranged at the lower portion of a plate-like element 4 made of rubber or silicone, as explained earlier.

[0017] The cartridge described above can then be inserted in a brass plate, which is suitably contoured and defines the body of the head, or in a head body that is made of plastic material and optionally chromium-plated.

[0018] In this manner, due to the extremely low thickness of the plate-like element 2 and of the two additional layers, i.e., the plate-like element 4 and the covering element 5, it is possible to provide a cartridge that has an extremely low thickness and therefore provide as a whole a head that has a reduced thickness, in order to provide a product that has a minimalist appearance, as required by the market.

[0019] Moreover, the fact of providing all the components of the cartridge by using plastic material or rubber allows the cost of the cartridge according to the invention to be far lower than the cost of known types of cartridges that are entirely or partly made of metal.

[0020] In practice it has been found that the cartridge according to the invention fully achieves the intended aim and objects, since it allows to provide a shower head of extremely low thickness and at low costs.

[0021] The cartridge thus conceived is susceptible of numerous modifications and variations, all of which are

within the scope of the appended claims; all the details may further be replaced with other technically equivalent elements.

[0022] In practice, the materials used, as well as the contingent shapes and dimensions, may be any according to requirements and to the state of the art.

[0023] The disclosures in Italian Patent Application No. MI2008U000092 from which this application claims priority are incorporated herein by reference.

[0024] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

obtained on the outer perimeter of said first plate-like element.

8. The cartridge according to one or more of the preceding claims, **characterized in that** said stiffening elements (10) comprise at least one rib (10) provided on said first plate-like element (2).
9. The cartridge according to one or more of the preceding claims, **characterized in that** said stiffening elements (10, 11) comprise a plurality of ribs (10) provided on said first plate-like element (2) and a raised border (11) that is obtained on the outer perimeter of said first plate-like element (2).

Claims

1. An internal cartridge (1) for shower heads, comprising a first plate-like element (2) provided with a plurality of holes (3) that are adapted to allow the passage of water, said holes (3) being adapted to accommodate one nozzle (9) each, and a second plate-like element (4), which is adapted to be coupled to said first plate-like element (2) and to be connected to a water supply pipe, **characterized in that** said first plate-like element (2) is made of plastic material.
2. The cartridge according to claim 1, **characterized in that** it comprises stiffening elements (10, 11) that are associated with said first plate-like element (2).
3. The cartridge according to claim 2, **characterized in that** said stiffening elements (10, 11) are made of plastic material.
4. The cartridge according to one or more of the preceding claims, **characterized in that** said stiffening elements (10, 11) are made of thermoplastic resins or thermosetting resins.
5. The cartridge according to one or more of the preceding claims, **characterized in that** said stiffening elements (10, 11) are provided on said first plate-like element (2) on the side that faces said second plate-like element (4).
6. The cartridge according to one or more of the preceding claims, **characterized in that** said stiffening elements (10, 11) are provided on said first plate-like element (2) on the opposite side to the one that faces said second plate-like element (4).
7. The cartridge according to one or more of the preceding claims, **characterized in that** said stiffening elements (11) comprise a raised border (11) that is

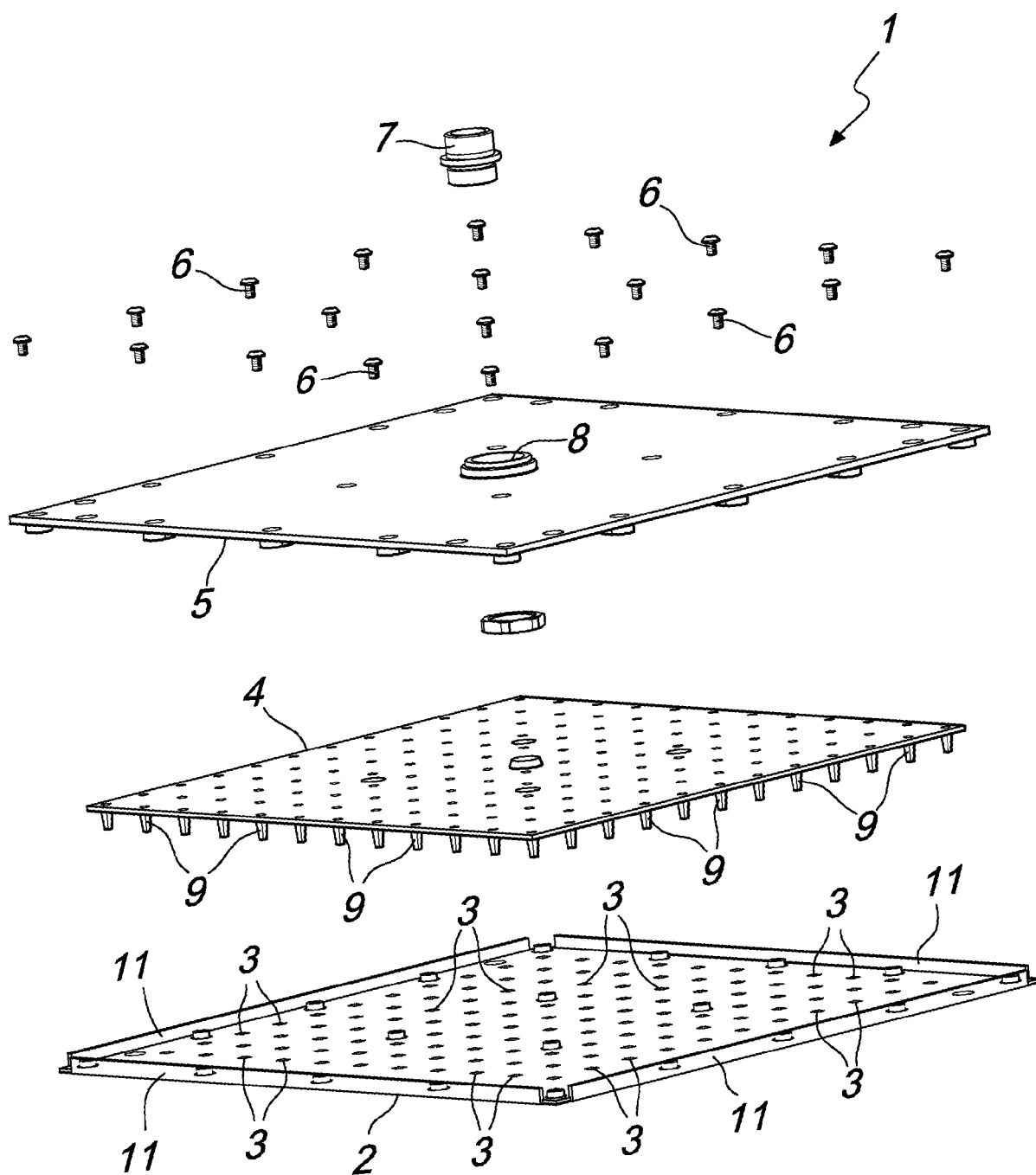


Fig. 1

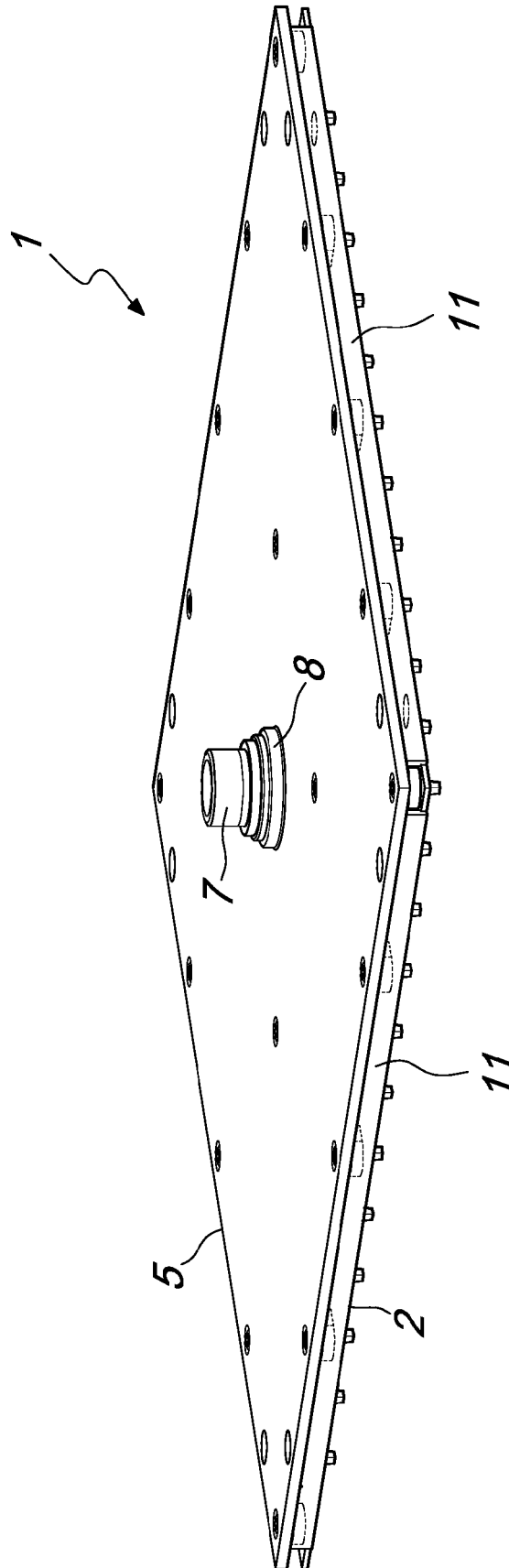


Fig. 2

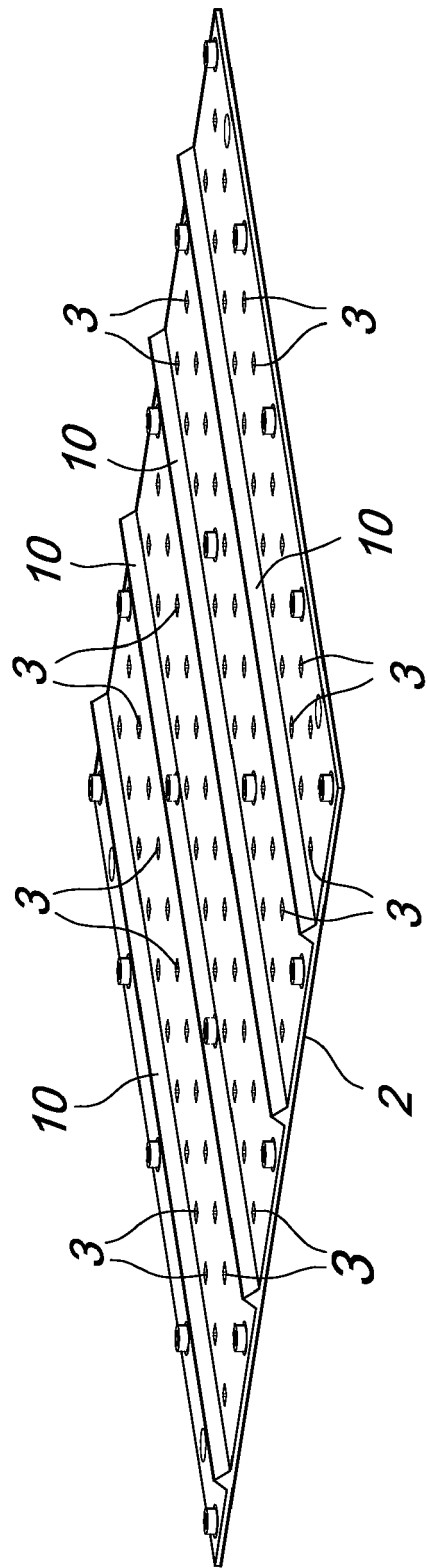


Fig. 3



EUROPEAN SEARCH REPORT

Application Number
EP 09 15 0963

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	JP 2008 012413 A (TOTO LTD) 24 January 2008 (2008-01-24) * abstract; figures 3-8 *	1-5,7-9	INV. B05B1/18
Y	* paragraphs [0006], [0025] *	6	
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X	US 6 382 531 B1 (TRACY MARTIN [CA]) 7 May 2002 (2002-05-07)	1-5,7	
Y	* column 6, lines 33-56; figures *	6,8,9	
Y	US 6 209 799 B1 (FINKBEINER WERNER [DE]) 3 April 2001 (2001-04-03) * column 3, lines 48-56 * * column 7, lines 18-65 * * figures *	6,8,9	TECHNICAL FIELDS SEARCHED (IPC)
			B05B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 9 June 2009	Examiner Endrizzi, Silvio
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p> <p>& : member of the same patent family, corresponding document</p>			

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EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 15 0963

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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09-06-2009

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