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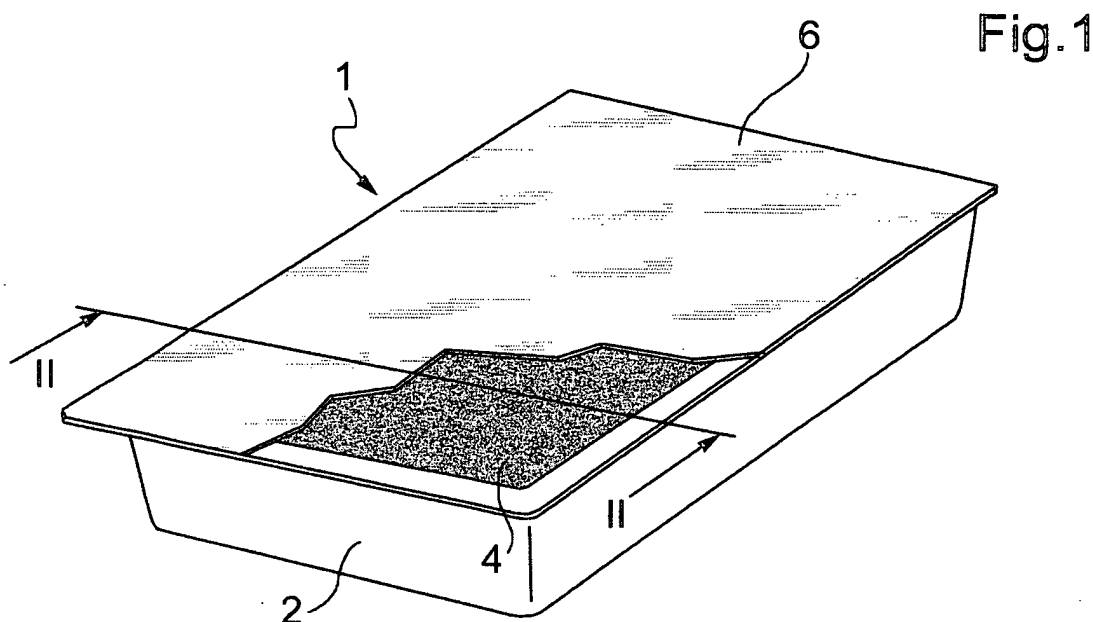
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(54) **Dehumidifying device**

(57) A dehumidifying device is described and is suitable for being placed inside containers or receptacles of other types in which metallic or non-metallic materials that need to be protected from moisture are present. The device comprises a receptacle (2) made of plastics material containing hygroscopic material (4), the receptacle (2) being closed by a sheet or film (6) of material that is

permeable to water vapour and impermeable to liquids from the interior towards the exterior. By virtue of these characteristics, the present invention allows the moisture that is present in the inside atmosphere to enter, capturing it and then preventing the leakage of the liquids which, at this point, are removed once and for all from the surrounding atmosphere.



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Description

[0001] The present invention relates to a dehumidifying device and, more precisely, to a dehumidifying device suitable for being placed in containers, boxes, or objects which are intended to hold metallic or non-metallic, machined or raw materials.

[0002] Materials disposed inside containers have to be protected from moisture to prevent their deterioration due to rust or corrosion, or they may be damaged or marked in some way by the moisture.

[0003] According to the prior art, bags or sachets of porous material containing dehumidifying products which absorb moisture are placed inside the containers.

[0004] These sachets have the disadvantage that they may deteriorate, causing the material which has already absorbed the moisture to leak into the environment.

[0005] The object of the present invention is to provide a device which overcomes the above-mentioned disadvantages and which is easy to construct and inexpensive.

[0006] The present invention achieves the above-mentioned objects by means of a dehumidifying device having the characteristics specified in the appended claims.

[0007] Further characteristics and advantages of the present invention will become clear in the course of the following detailed description which is given purely by way of nonlimiting example with reference to the appended drawings, in which:

Figure 1 is a perspective view of a first embodiment of a device according to the invention,

Figure 2 is a section taken in the plane II-II of Figure 1, and

Figure 3 is a perspective view of a second embodiment of the device according to the invention.

[0008] With reference to the drawings, a device according to the present invention is generally indicated 1; it comprises a receptacle 2 which may be, for example, of rectangular or circular shape or of any other shape, and contains a hygroscopic substance 4 which may or may not contain a gelling substance; the hygroscopic substance 4 can absorb moisture from the surrounding air.

[0009] A sheet or film 6 of material that is permeable to water vapour and is impermeable to liquids in the direction from the interior towards the exterior is welded to the receptacle 2, for example, by heat-sealing or ultrasound welding or equivalent systems, thus allowing moisture to enter the receptacle 2 where it is transformed into liquid and can no longer escape.

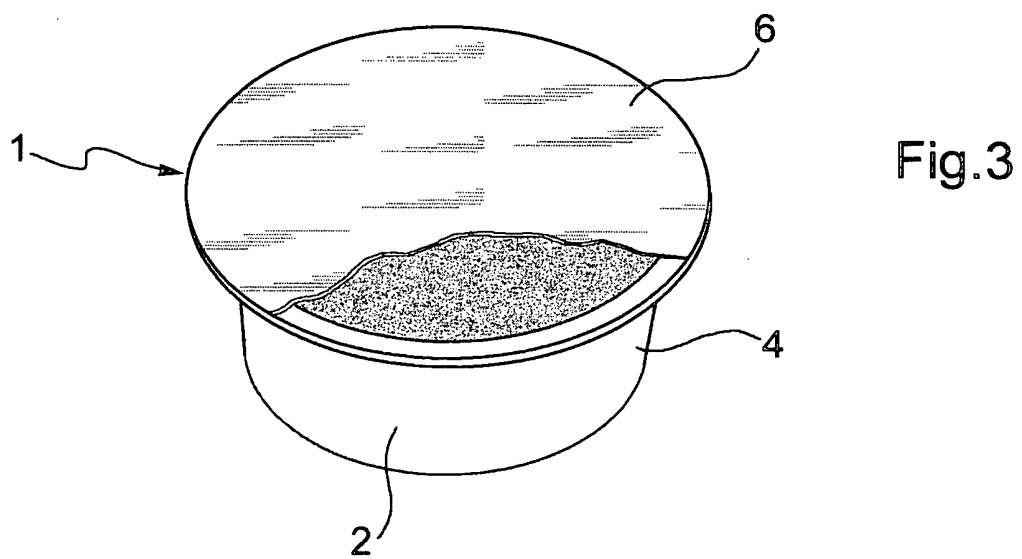
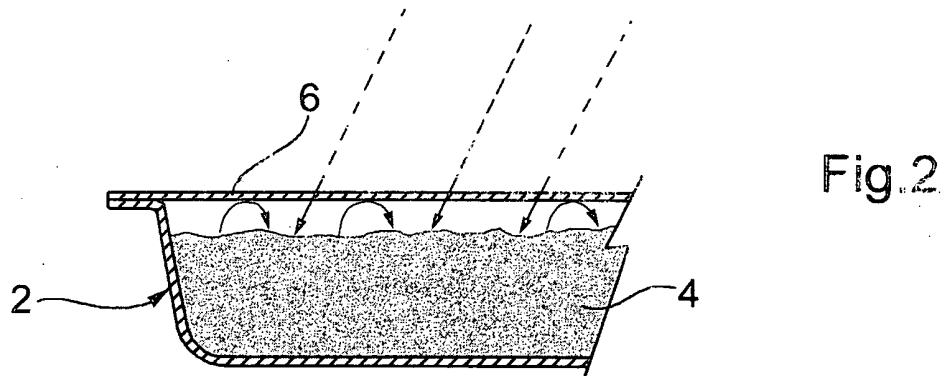
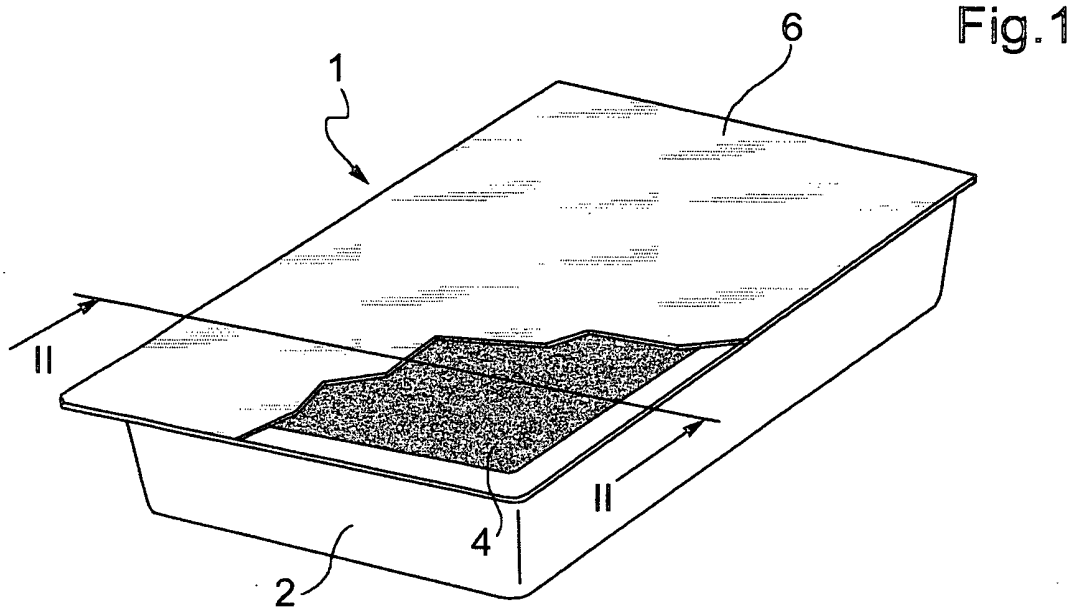
[0010] When a receptacle according to the invention is inserted in a container in which metallic or non-metallic products are present, the moisture which is present in the container comes into contact with the hygroscopic substance 4 contained in the receptacle 2 - by filtering through the water-vapour permeable sheet 6 as described above - and combines with the hygroscopic substance, forming a type of jelly which retains the water, thus dehumidifying the atmosphere and, by virtue of the material of which the receptacle is made (that is, plastics material or in any case plastics-type material), the moisture can no longer escape.

[0011] The sheet 6 heat-sealed onto the receptacle 2 is formed, for example, by a flexible, microporous, polythene-coated film.

[0012] Naturally, the principle of the invention remaining the same, wide variations may be applied to the embodiments described and illustrated without thereby departing from the scope of the present invention; for example, the receptacle may be of any shape and the hygroscopic substance may contain gelling materials.

Claims

1. A dehumidifying device suitable for being placed inside containers or other receptacles in which materials to be protected from moisture are present, **characterized in that** it comprises a receptacle (2) made of plastics material containing hygroscopic material (4), the receptacle (2) being closed by a sheet or film (6) of material that is permeable to water vapour and impermeable to liquids from the interior towards the exterior.
2. A device according to Claim 1, **characterized in that** the receptacle (2) is of the rigid or semi-rigid type.
3. A dehumidifying device according to Claim 1 and Claim 2, **characterized in that** the film (6) is heat-sealed onto the receptacle (2).
4. A dehumidifying device according to any one of Claims 1 to 3, **characterized in that** the film (6) is a flexible, microporous, polythene-coated film. The whole as described and illustrated and for the purposes specified.





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EUROPEAN SEARCH REPORT

Application Number
EP 03 00 1520

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	EP 0 793 992 A (UNITED CATALYSTS INC) 10 September 1997 (1997-09-10)	1,4	B65D81/26
Y	* column 2, line 50 - column 3, line 8 * * column 3, line 54 - column 4, line 2 * * column 7, line 1 - line 3 *	2,3	
Y	WO 02 12089 A (REBMA ;KLAASSEN MARCEL THEODORUS ANTO (NL)) 14 February 2002 (2002-02-14) * page 1, line 4 - line 9; figure 5 * * page 2, line 16 - line 29 * * page 7, line 30 - page 8, line 5 *	2,3	
A	FR 2 759 867 A (ATMOSPHERE CONTROLE SA) 28 August 1998 (1998-08-28)		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B65D
Place of search		Date of completion of the search	Examiner
THE HAGUE		2 June 2003	Kamerbeek, M
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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02-06-2003

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
EP 0793992	A	10-09-1997	US	5773105 A	30-06-1998
			CA	2182353 A1	08-09-1997
			CN	1159362 A	17-09-1997
			EP	0793992 A2	10-09-1997
			JP	9295680 A	18-11-1997
			SG	49981 A1	15-06-1998
WO 0212089	A	14-02-2002	NL	1015869 C2	05-02-2002
			AU	9434001 A	18-02-2002
			EP	1307390 A1	07-05-2003
			WO	0212089 A1	14-02-2002
FR 2759867	A	28-08-1998	FR	2759867 A1	28-08-1998
			FR	2759868 A1	28-08-1998

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82