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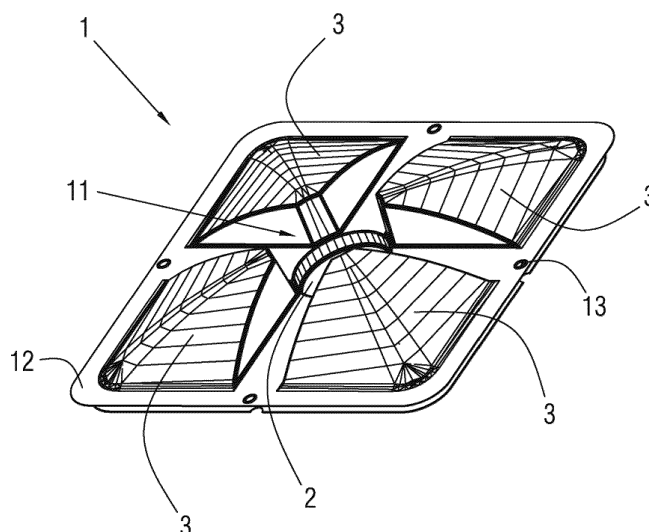
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(54) **SURFACE-COVER DEVICE FOR DAMMED WATER**

(57) The invention relates to a surface-cover device for dammed water, comprising a body with a predominantly flat and polygonal geometry, and in which at least one element is integrated to provide buoyancy on the surface of the water, as well as at least one volumetric ventilation chamber, said ventilation chamber being dis-

posed such that it receives a possible evaporation from the surface of the water over which said body is located. The surface-cover device for the dammed water permits a surface of dammed water to be protected against sun exposure, thereby preventing the loss thereof through evaporation.

FIG.1



Description

OBJECT OF THE INVENTION

[0001] The object of the present invention application is to register a surface-cover device for dammed water which incorporates significant innovations and advantages over the techniques used up until now.

[0002] More specifically, the invention proposes the development of a surface-cover device for dammed water which, due to its particular arrangement, allows a surface of dammed water to be protected from solar exposure, thus preventing its loss due to evaporation.

BACKGROUND OF THE INVENTION

[0003] For some time now, at an international level, there has been a general problem in many regions due to water deficit. For this reason, there are a number of systems, methods and innovations known in the prior art to optimise both the consumption and the storage of water to ensure the best use of the available water resources.

[0004] In regions wherein there is a large water deficit, more innovations are normally applied in the interest of optimising this valuable resource and, therefore, more inventions can be developed, both in the field of sustainable transport and supply and that of storage per se.

[0005] More specifically, and focusing on the storage or damming of the water, there is an additional problem, derived from prolonged solar exposure of large quantities of dammed water and since it often coincides with the fact that an area with water deficit is also an area with very large and powerful ratios of solar exposure, the problem of evaporation of the dammed water becomes quite relevant.

[0006] For this reason, with the aim of remedying this problem, different embodiments and technical solutions have appeared in order to reduce or alleviate the water loss which is produced by evaporation in these water storage installations.

[0007] However, these technical solutions have different drawbacks, such as limited effectiveness when faced with evaporation, complexity in the assembly and/or installation, as well as in the maintenance thereof, among others.

[0008] The present invention contributes to solving and resolving the present problem, since it permits a surface of dammed water to be protected against sun exposure, thereby preventing the loss thereof through evaporation.

DESCRIPTION OF THE INVENTION

[0009] The present invention was developed with the aim of providing a surface-cover device for dammed water, which is essentially characterised in that it comprises a body with a predominantly flat and polygonal geometry, and in which at least one element is integrated to provide

buoyancy on the surface of the water, as well as at least one volumetric ventilation chamber, said ventilation chamber being disposed such that it receives a possible evaporation from the surface of the water over which said body is located.

[0010] Additionally, in the surface-cover device for dammed water, the body has a substantially square geometry.

[0011] Alternatively, in the surface-cover device for dammed water, the body has dimensions between 30x30 cm and 120x120 cm.

[0012] Preferably, the surface-cover device for dammed water comprises ventilation means for the ventilation chamber.

[0013] Additionally, in the surface-cover device for dammed water, the ventilation means comprise grooves which connect the interior of the ventilation chamber with the exterior.

[0014] Additionally, the surface-cover device for dammed water comprises a belt by way of a tab arranged on the perimeter around the body and which is contained in a contact plane between the buoyancy element and the surface of the water.

[0015] Preferably, in the surface-cover device for dammed water, the body has in the central region thereof a housing enabled to accommodate the buoyancy element.

[0016] Additionally, the surface-cover device for dammed water comprises an exterior perimeter tab in the body which is higher in relation to the surface of the water and is enabled to incorporate means for fastening between a plurality of bodies.

[0017] Alternatively, in the surface-cover device for dammed water, the fastening means comprise holes enabled for the insertion of plastic screw or bolt elements.

[0018] Preferably, in the surface-cover device for dammed water, the body is made of polymeric material or similar fibre-reinforced material.

[0019] Alternatively, in the surface-cover device for dammed water, the body is made of a polymeric material or similar material without fibre.

[0020] Owing to the present invention, a surface of dammed water can be protected against sun exposure, thereby preventing the loss thereof through evaporation.

[0021] Other features and advantages of the surface-cover device for dammed water will become apparent from the description of a preferred but not exclusive embodiment illustrated by way of non-limiting example in the attached drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] Figures 1 and 2 are schematic views from different perspectives of a preferred embodiment of the surface-cover device for dammed water of the present invention.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0023] As is schematically shown from different perspectives in the figures 1 and 2, the surface-cover device for dammed water comprises a body 1 with a predominantly flat and polygonal geometry. In this preferred embodiment, the body 1 has a square shape.

[0024] Furthermore, in the body 1 at least one buoyancy element 2 is integrated which provides the body 1 with the possibility of floating on the surface of the water.

[0025] In figure 1, the surface-cover device for dammed water of the invention is represented from an upper perspective in relation to the surface of the water over which it is located. In figure 2, the same surface-cover device for dammed water of the invention is represented, but from a lower perspective in relation to the surface of the water over which it is located.

[0026] The body 1 also incorporates at least one volumetric ventilation chamber 3. In this preferred embodiment, there are four identical ventilation chambers 3. Said ventilation chambers 3 are arranged in the body 1 by way of cavities or a vaulted geometry and such that they receive any evaporation of the surface of the water on which the body 1 itself floats.

[0027] At the same time, surface-cover device for dammed water of the present invention comprises ventilation means for the ventilation chamber 3.

[0028] As seen in figure 2, in this preferred embodiment, the ventilation means comprise grooves 31 which connect the interior of the ventilation chamber 3 with the exterior.

[0029] The main function of the ventilation chambers 3 is to protect from prolonged exposure to the sun which may cause the evaporation of some water and since they are ventilated laterally through the grooves 31 and have the vaulted shape which can be distinguished in figures 1 and 2, this favours the return of said water by means of condensation and therefore prevents the loss thereof through evaporation.

[0030] Said vaulted or dome shape of the ventilation chambers 3 facilitates the condensation of the evaporated water on the interior contour of said chambers and therefore it falls on the surface of the water.

[0031] The body 1 has a belt 4 by way of a tab arranged on the perimeter around the same, as seen in figure 2 and which is contained in a contact plane between the buoyancy element 2 and the surface of the water, in order to thus provide stability for the body 1 when it floats on the surface of the water.

[0032] The body 1 can have in the central region thereof a housing 11 enabled to accommodate the buoyancy element 2 and having a circular, square or other suitable geometry.

[0033] The surface-cover device for dammed water can comprise an exterior perimeter tab 12 in the body 1 and it is higher in relation to the surface of the water on which the body 1 itself rests and it is enabled to incorporate means for fastening between a plurality of bodies 1

and fastening said bodies mutually between them with the aim of assembling a matrix of bodies 1. Said fastening means comprise holes 13 enabled for the insertion of plastic screw, bolt or clip elements, for example, and thereby be able to join bodies 1 to others.

[0034] The arrangement of the holes 13 in the perimeter tab 12 allows the passage of air, thereby preventing the wind from moving the bodies 1 when they float on the surface of the water.

[0035] At the same time, the exterior perimeter tab 12 makes it difficult for the water covered by said tab to evaporate.

[0036] With the option mentioned above of mutually fastening a plurality of bodies 1, it is possible to produce a matrix of bodies 1 in order to thus cover wide extensions of surfaces of dammed water.

[0037] In this sense, with the aforementioned option of mutually joining a plurality of bodies 1 with screw, bolt or clip elements, since this joining has a sufficient clearance if the water level is lowered or raised and therefore reducing or increasing the extension of the surface free of water, the general extension of the matrix produced by the bodies 1 can be adapted to the surface free of water of the reservoir on the perimeter thereof.

[0038] The body 1 is made of polymeric or similar fibre-reinforced material, or material without fibre, and is adequately resistant to the outdoors and external climatic agents.

[0039] In a preferred embodiment of the invention, the body 1 has a square geometry and dimensions of between 30x30 cm and 120x120 cm.

[0040] These dimensions can vary, but should always fluctuate between values that can provide optimal surface ratios in order not to have to place large quantities of bodies 1 to cover relatively extensive surfaces of water and therefore, dimensions such that they allow optimal the manufacture thereof in equipment for processing polymeric material, which also have dimensional limitations which can cause a body 1 to not be viable for manufacture due to the excessive dimensions thereof or due to the high manufacturing costs which this may entail (machinery, moulds, quantity of material, manufacturing times, etc...).

[0041] The surface-cover device for dammed water of the present invention, since it does not allow the passage of light, also helps to reduce the proliferation of algae, since they require light to survive.

[0042] The details, shapes, dimensions and other secondary elements, as well as the materials used in manufacturing a surface-cover device for dammed water of the invention, may be suitably replaced with others that are technically equivalent and do not depart from the essential nature of the invention or from the scope defined by the claims included below.

Claims

rial.

1. The invention relates to a surface-cover device for dammed water, **characterised in that** it comprises a body (1) with a predominantly flat and polygonal geometry, and in which at least one element (2) is integrated to provide buoyancy on the surface of the water, as well as at least one volumetric ventilation chamber (3), said ventilation chamber (3) being disposed such that it receives a possible evaporation from the surface of the water over which said body (1) is located. 5 10
2. The surface-cover device for dammed water, **characterised in that** the body (1) has a substantially square geometry. 15
3. The surface-cover device for dammed water according to claim 2, **characterised in that** the body (1) has dimensions between 30x30 cm and 120x120 cm. 20
4. The surface-cover device for dammed water according to claim 1, **characterised in that** it comprises ventilation means for the ventilation chamber (3). 25
5. The surface-cover device for dammed water according to claim 4, **characterised in that** the ventilation means comprise grooves (31) which connect the interior of the ventilation chamber (3) with the exterior. 30
6. The surface-cover device for dammed water according to claim 1, **characterised in that** it comprises a belt (4) by way of a tab arranged on the perimeter around the body (1) and which is contained in a contact plane between the buoyancy element (2) and the surface of the water. 35
7. The surface-cover device for dammed water according to claim 1, **characterised in that** the body (1) has in the central region thereof a housing (11) enabled to accommodate the buoyancy element (2). 40
8. The surface-cover device for dammed water according to claim 1, **characterised in that** it comprises an exterior perimeter tab (12) in the body (1) and is higher in relation to the surface of the water and it is enabled to incorporate means for fastening between a plurality of bodies (1). 45 50
9. The surface-cover device for dammed water according to claim 8, **characterised in that** the fastening means comprise holes (13) enabled for the insertion of plastic screw or bolt elements. 55
10. The surface-cover device for dammed water according to claim 1, **characterised in that** the body (1) is made of polymeric or similar fibre-reinforced mate-
11. The surface-cover device for dammed water according to claim 1, **characterised in that** the body (1) is made of polymeric or similar material without fibre.

FIG. 1

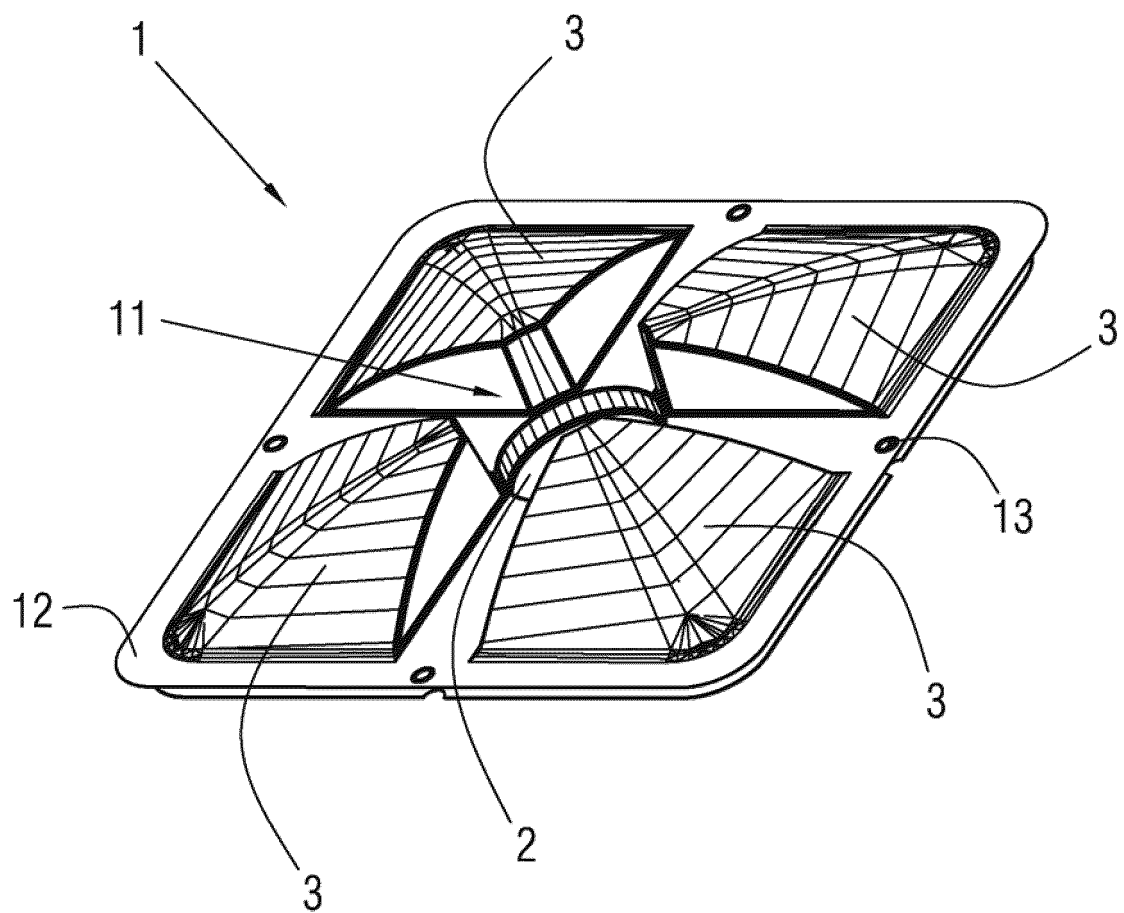
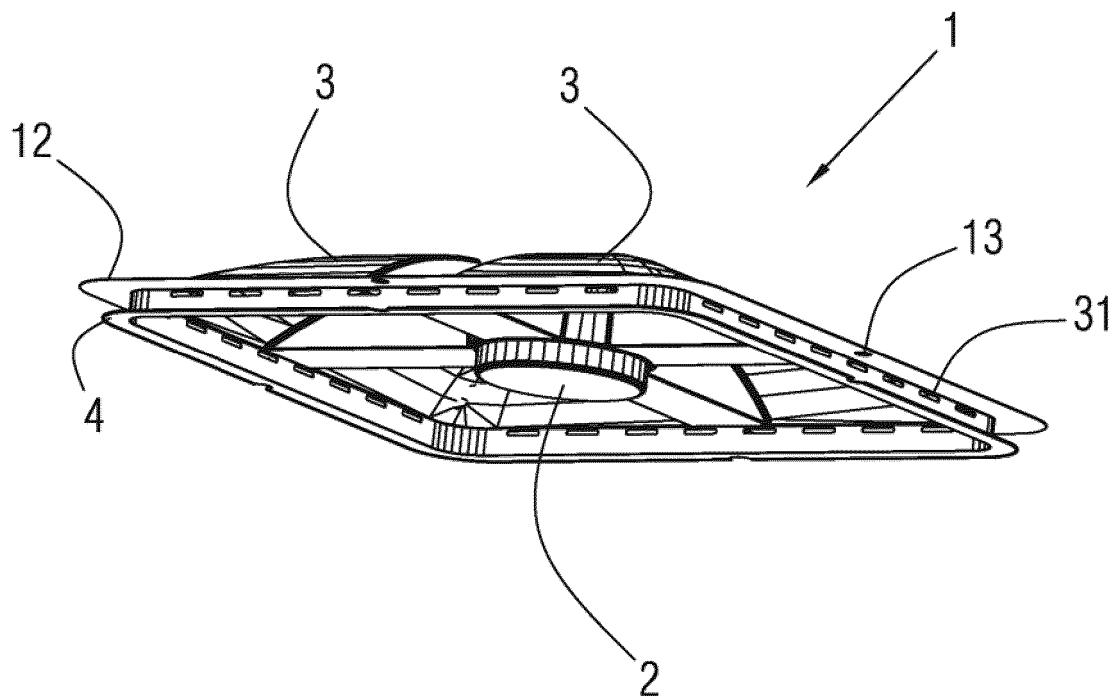


FIG.2



INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2018/070802

A. CLASSIFICATION OF SUBJECT MATTER

B65D88/34 (2006.01)

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)

B65D

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)

EPODOC, INVENES, ESPACENET, INTERNET, NPL, WPIAP, WPI, BASES DE DATOS LÓGICAS DE PATENTES, PATENW

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2006010204 A1 (WATER INNOVATIONS PTY LTD ET AL.) 02/02/2006,	1-11
A	WO 2011035362 A1 (AQUA GUARDIAN GROUP LTD ET AL.) 31/03/2011,	1-11

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance.

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"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 documents, such combination being obvious to a person skilled in the art

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International application No.

PCT/ES2018/070802

Information on patent family members

Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
WO2011035362 A1	31.03.2011	NONE	
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WO2006010204 A1	02.02.2006	ES2460720T T3	14.05.2014
		PT1771359E E	26.09.2013
		IL180408 A	31.10.2012
		NZ552428 A	28.08.2009
		EG24498 A	17.08.2009
		ZA200700378 B	25.09.2008
		MX2007000997 A	23.05.2007
		US2008000903 A1	03.01.2008
		US8393486 B2	12.03.2013
		CN1989053 A	27.06.2007
		CN100532222C C	26.08.2009
		BRPI0513851 A	20.05.2008
		AU2005266839 A1	02.02.2006
		AU2005266839B B2	24.04.2008
		EP1771359 A1	11.04.2007
		EP1771359 A4	29.10.2008
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