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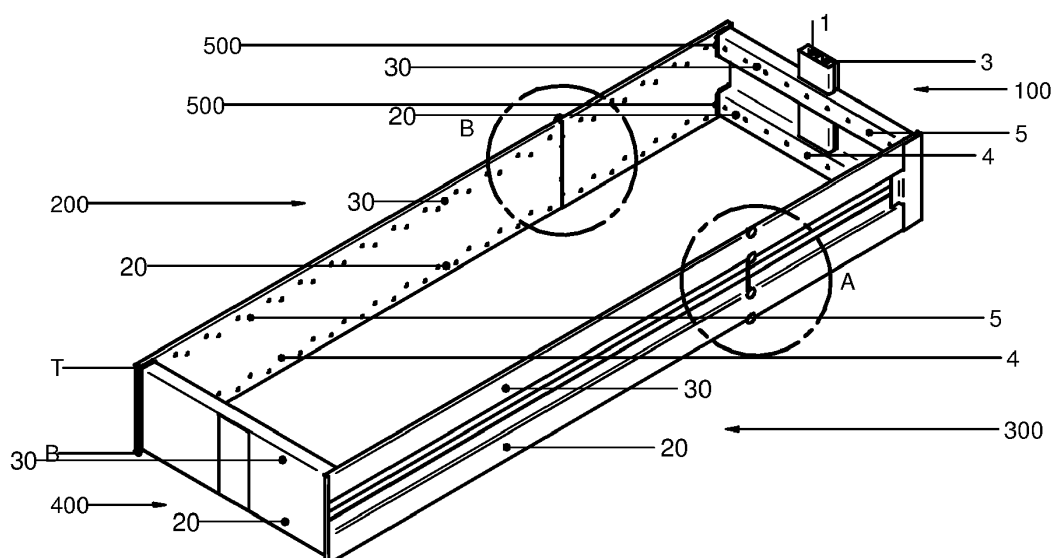
(54) **DEVICE FOR COOLING AND PURIFYING THE INSIDE OF A COFFIN AND COFFIN EQUIPPED WITH SUCH A DEVICE**

(57) A coffin equipped with a device for cooling and purifying the inside of a coffin, comprises at least one inlet point inside the coffin (1) of cold air, a in-feeding network inside the coffin (20) of the cold air connected to the inlet point inside the coffin (1), at least one outlet point of the air (3) from the coffin, the in-feeding network inside the coffin (20) consisting of first sections of communicating ducts provided with a plurality of openings

approximately at a level at the base (B) of the coffin (4).

A evacuation network inside the coffin (30) of the air consists of second sections of communicating ducts provided with a plurality of openings approximately at a level at the upper edge (T) of the coffin (5), the air inside the coffin passing throughout the plurality of the openings (4) up to the base (B), to the plurality of the openings (5) at the upper edge (T).

[Fig. 1]



## Description

### Technical Field

[0001] The present invention relates to a device for cooling and purifying the inside of a coffin. Furthermore, the present invention relates to a coffin equipped with a device for cooling and purifying the inside of a coffin.

[0002] In general, the present invention relates to arrangements for the circulating gas, for example, air, inside spaces, refrigerated containers, packaging elements or packages for contents that have particular problems of transport or storage.

[0003] In particular, the present invention relates to boxes with cooling arrangements for the corpse, connections for coffins, divisions of the space cooling, packaging elements which retain or surround completely or almost completely the bundle of articles, for example, winds around the packaging elements, for example, wrappers which are formed by bending a single sheet having a tubular shape, for example, tubular wrappings, with end walls, to a single sheet, the shape of each element formed if the housing is made of more than one tubular element with end walls, e.g. walls which do not extend over the entire end surface, the end walls are closed by glueing.

### Background Art

[0004] DE patent 19 812 217 A1 relates to the inside of a coffin with a system for supplying gas cooling a supply pipe connected to a feeding point at one end of the casing to pick up cooling gas inside of the coffin and a return pipe connected to a return point to form a circuit for circulating the cooling gas, the return pipe is situated opposite or in the same end of the coffin as the connection of the supply pipe.

[0005] US patent 7,926,295 B2 relates to a cardboard box and a method for enclosing a plurality of containers into a carton, the cardboard includes a first and a second top panel, a first and a second side panel and a lower panel the upper panels each comprising separation lines, the cardboard is opened along the separation lines to expose the containers, the cardboard is capable of receiving a cooling substance therein when the upper panels are separated along the lines of separation.

### Summary of Invention

#### Technical Problem

[0006] The DE patent 19 812 217 A1 solves the problem of providing a circuit for the passage of fluid to allow a continuous change of the fluid inside of a coffin, but the coffin must be drilled to the base.

[0007] Moreover, the flow of gas is based exclusively on a closed circuit of a coolant gas.

## Solution to Problem

[0008] Object of the present invention is solving the above prior art problems by providing a refrigeration device of the internal space of a coffin capable of presenting high efficiency in the circulation and changing of air inside of a coffin.

[0009] A further object is not to use a coolant gas in a circuit isolated but cold air which could be that of the surrounding environment.

[0010] A further object is to provide a refrigeration device made of cardboard folded to create a channel crossed by the air inside a coffin starting from US patent 7,926,295 B2.

[0011] A further object is to provide a refrigeration device inside of a coffin that is capable of ensuring uniform distribution of air while the coffin is open.

[0012] A further object is to provide a refrigeration device inside of a coffin that is able to send the cold air in all the spaces inside the coffin, with an inlet to the head and the blowing at the sides and at the foot of the coffin.

[0013] A further object is to provide a refrigeration device inside of a coffin of type adaptable to a range of overall dimensions.

[0014] A further object is to provide a refrigeration device inside of a coffin capable of ensuring the purification of the air emitted to the outside.

[0015] A further object is to provide a refrigeration device inside of a coffin capable of rendering superfluous the exchange of air in the environment in which the coffin is immersed.

[0016] The aforementioned and other objects and advantages of the invention, as they will emerge from the following description, are achieved with a device for cooling and purifying the inside of a coffin and a coffin equipped with a device for cooling and purifying the inside of a coffin, as described in the main claim. Preferred embodiments and non-trivial variants of the present invention form the object of the dependent claims. It is understood that all the deriving claims form an integral part of the present description. It will be immediately obvious that innumerable variations and modifications (for example relating to shape, dimensions, arrangements and parts with equivalent functionality) can be made to the description without departing from the scope of protection of the invention as it appears from the appended claims.

[0017] In particular, the patent DE 29 43 251 A1 is considered relevant.

#### Brief Description of Drawings

[0018] The present invention will be better described by some preferred embodiments thereof, provided as a non-limiting example, with reference to the accompanying drawings.

[Fig. 1] shows an axonometric view of an embodiment of the device for cooling and purifying the inside

of a coffin, according to the present invention.

[Fig. 2] shows an enlarged detail A of the previous figure.

[Fig. 3] shows an enlarged view of a detail B of [Fig. 1].

[Fig. 4] shows a side view connected to [Fig. 1].

[Fig. 5] shows an enlarged section according to the line C-C of the previous figure.

[Fig. 6] shows an axonometric view of a first part of an embodiment of the device for cooling and purifying the inside of a coffin, according to the present invention.

[Fig. 7] shows a plan view connected to the previous figure.

[Fig. 8] shows an axonometric view of a second and third part of an embodiment of the device for cooling and purifying the inside of a coffin, according to the present invention.

[Fig. 9] shows an axonometric view of a fourth part of an embodiment of the device for cooling and purifying the inside of a coffin, according to the present invention.

[Fig. 10] shows an axonometric view of an element necessary for the assembly of an embodiment of the device for cooling and purifying the inside of a coffin, according to the present invention.

[Fig. 11] shows an operating scheme of an embodiment of the device for cooling and purifying the inside of a coffin, according to the present invention.

### Description of Embodiments

**[0019]** With reference to Fig. 1, it is possible to note that a coffin, not shown, equipped with a device for cooling and purifying the inside of a coffin comprises at least one inlet point inside the coffin 1 of cold air, a in-feeding network inside the coffin 20 of the cold air connected to the inlet point in the coffin 1, at least one outlet point of the air 3 from the coffin, the in-feeding network inside the coffin 20 consisting of first sections of communicating ducts provided with a plurality of openings approximately at a level at the base B of the coffin 4.

**[0020]** Advantageously, a evacuation network inside the coffin 30 of the air connected to the outlet point from the coffin 3 consists of second sections of communicating ducts provided with a plurality of openings approximately at a level at the upper edge T of the coffin 5, the air inside the coffin passing throughout the plurality of the openings

4 up to the base B, to the plurality of the openings 5 at the upper edge T.

**[0021]** The at least one feed point in the coffin 1, the feeding network in the coffin 20, the at least one point of exit from the coffin 3, as well as the evacuation network in the coffin 30 belong to implementation of cardboard sheets properly folded and joined at the edges.

**[0022]** Referring to Figures 1 to 10, the device for cooling and purifying the inside of a coffin is constituted by a structure at the headboard inside the coffin 100 of a single folded cardboard sheet comprising: a section of a duct connected to such at least one in-feeding point inside the coffin 1 and to a duct of the in-feeding network inside the coffin 20; a section of duct connected to such at least one outlet point from the coffin 3 and to a section of the duct of the evacuation network inside the coffin 30; a pair of side rand structures 200, 300, each side rand structure 200, 300 made of a single folded cardboard sheet comprising a duct section of the in-feeding network inside the coffin 20 and a duct section of the evacuation network inside the coffin 30; a structure at the foot of the coffin 400 of a single folded cardboard sheet comprising a duct section of the in-feeding network inside the coffin 20; and a duct section of the evacuation network inside the coffin 30. The structures 100, 200, 300, 400 are appropriately joined to the edges by means of cardboard sleeves 500 and secured by portions of adhesive paper 600.

**[0023]** Preferably, the structures 100, 200, 300, 400 are covered with fabric or other material to lend the inside of the coffin an aesthetic character.

**[0024]** The in-feeding point inside the coffin 1 of cold air is connected to a cooling and circulation device of the cold air provided with a conventional compressor CE outside the coffin, of power able to push cold doped air in the coffin, using a flexible hose of suitable length.

**[0025]** Furthermore, such at least one point of exit from the coffin 3 is connected to a suction unit BE external to the coffin provided with a filter to eliminate odour and bacteria in the air, through a purifier of the type ionizer, activated carbon, UV.

**[0026]** Also, the suction unit BE comprises a dehumidifier device for dehumidifying the cold air.

**[0027]** Referring to Figure 11, in accordance with a preferred embodiment, the suction unit BE is connected to the conventional compressor (CE) to recirculate the purified air inside the coffin.

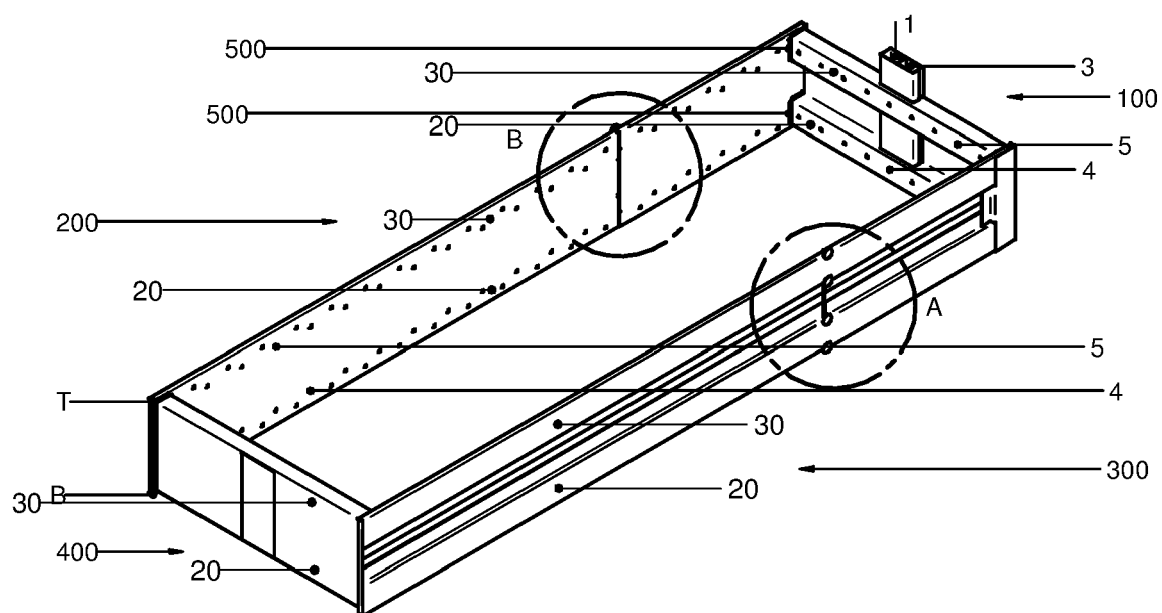
**[0028]** Furthermore, means for adding preservative and/or for adding an odour reducing agent to the cold air can be provided.

**[0029]** A coffin equipped with a device for cooling and purifying the inside of a coffin can be without a lid. Or alternatively, totally or partially covered with a transparent laminate or a veil.

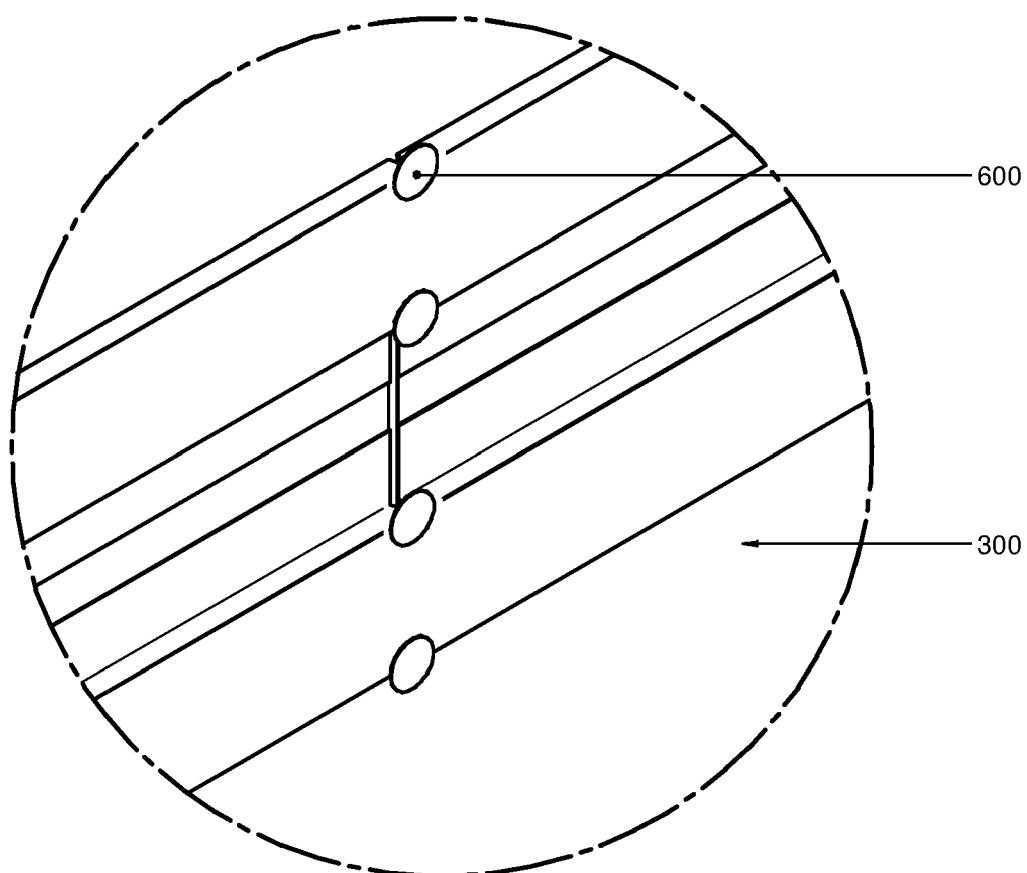
## Claims

1. Coffin equipped with a device for cooling and purifying the inside of a coffin, comprising at least one inlet point inside the coffin (1) of a cold air, a in-feeding network inside the coffin (20) of the cold air connected to the inlet point inside the coffin (1), at least one outlet point of the air (3) from the coffin, the in-feeding network inside the coffin (20) consisting of first sections of communicating ducts provided with a plurality of openings approximately at a level at the base (B) of the coffin (4), said coffin equipped with a device for cooling and purifying the inside of a coffin **characterized in that** it comprises a evacuation network inside the coffin (30) of the air connected to the outlet point from the coffin (3), the evacuation network inside the coffin (30) consisting of second sections of communicating ducts provided with a plurality of openings approximately at a level at the upper edge (T) of the coffin (5), the air inside the coffin passing throughout the plurality of the openings (4) up to the base (B), to the plurality of the openings (5) at the upper edge (T). 5
2. Coffin equipped with a device according to the previous claim, **characterized in that** it comprises a conventional compressor (CE) outside the coffin, of power able to push cold dosed air in the coffin, using a flexible hose of suitable length connected to the inlet point of cold air inside the coffin (1). 10
3. Coffin equipped with a device according to one of the preceding claims, **characterized in that** it comprises a suction unit (BE) external to the coffin provided with a filter to eliminate odor and bacteria in the air, by means of a purifier of the ionizer, activated carbon, UV type, said suction unit (BE) connected to said at least one outlet point of air from the coffin (3). 15
4. Coffin equipped with a device according to the previous claim, **characterized in that** the suction unit (BE) is connected to the conventional compressor (CE) to recirculate the purified air inside the coffin. 20
5. Coffin equipped with a device according to one of the previous claims 3, 4, **characterized in that** the suction unit (BE) comprises a dehumidifying device for dehumidifying cold air. 25
6. Coffin equipped with a device according to one of the preceding claims, **characterized in that** means for adding preservative and / or for adding an odor reducing agent to the cold air can be provided. 30
7. Coffin equipped with a device according to one of the preceding claims, **characterized in that** said at least one inlet point inside the coffin (1), the in-feeding network inside the coffin (20), said at least one outlet point of air from the coffin (3), as well as the evacuation network inside the coffin (30) belong to an implementation of cardboard sheets properly folded and joined at the edges. 35
8. Device for cooling and purifying the inside of a coffin according to one of the previous claims, said device **characterized in that** it is constituted by a structure at the headboard inside the coffin (100) of a single folded cardboard sheet, said structure at the headboard inside the coffin (100) comprising a section of a duct connected to said at least one inlet point inside the coffin (1) and to a duct of the in-feeding network inside the coffin (20), a section of duct connected to said at least one outlet point from the coffin (3) and to a section of duct of the evacuation network inside the coffin (30), a pair of side rand structures (200), (300), each side rand structure (200), (300) made of a single folded cardboard sheet comprising a duct section of the in-feeding network inside the coffin (20) and a duct section of the evacuation network inside the coffin (30), a structure at the foot inside the coffin (400) of a single folded cardboard sheet comprising a duct section of the in-feeding network inside the coffin (20) and a duct section of the evacuation network inside the coffin (30), said structures (100), (200), (300), (400) appropriately joined to the edges by means of cardboard sleeves (500) and secured by portions of adhesive paper (600). 40
9. Device according to the previous claim, **characterized in that** said structures (100), (200), (300), (400) are covered with fabric or other material to lend the inside of the coffin an aesthetic character. 45

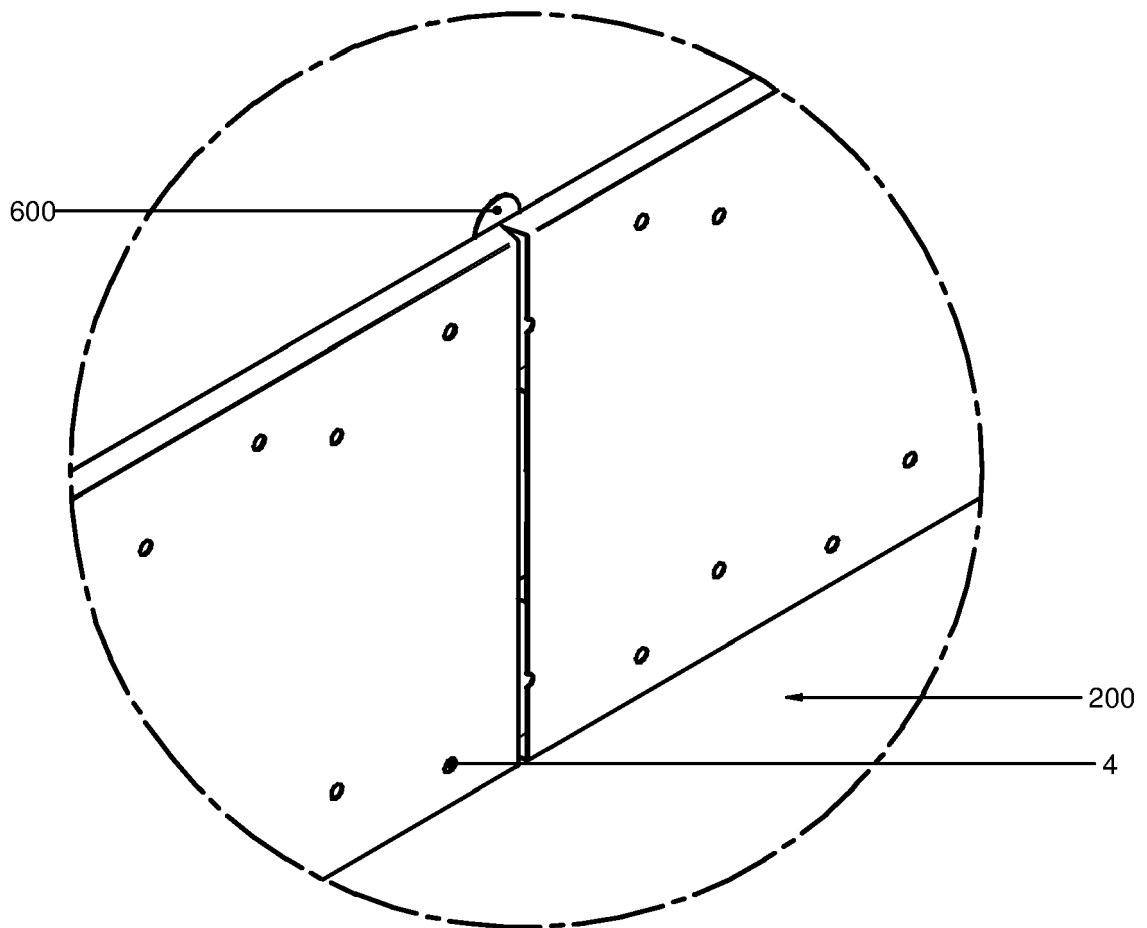
[Fig. 1]



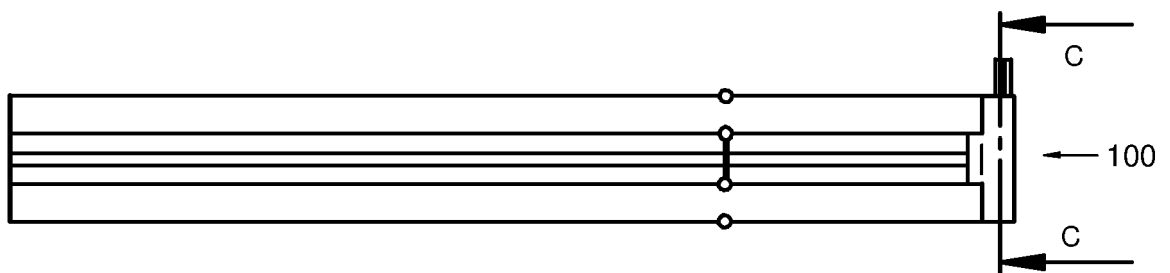
[Fig. 2]



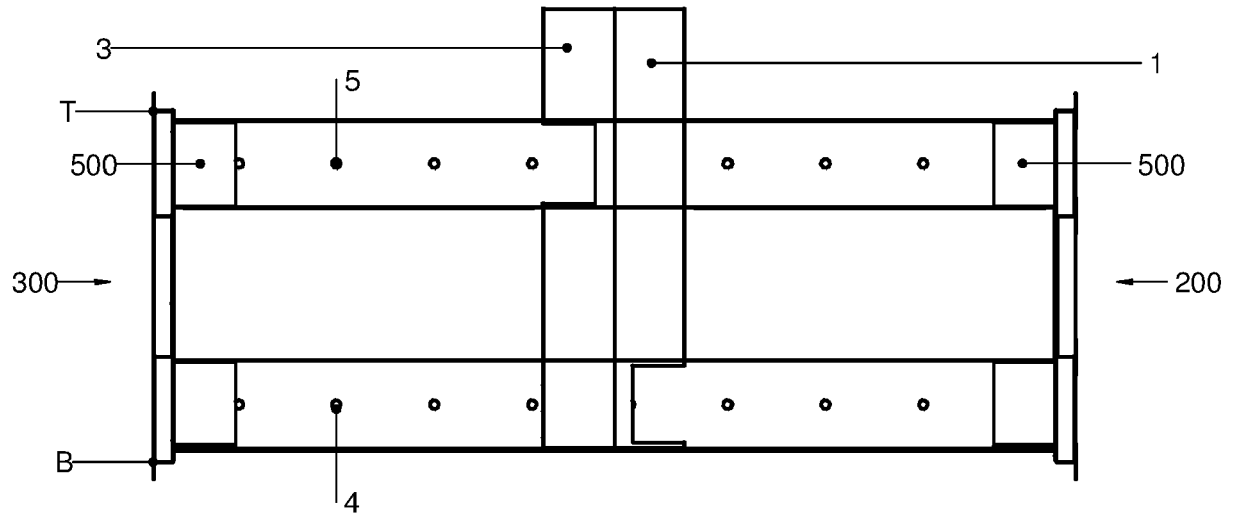
[Fig. 3]



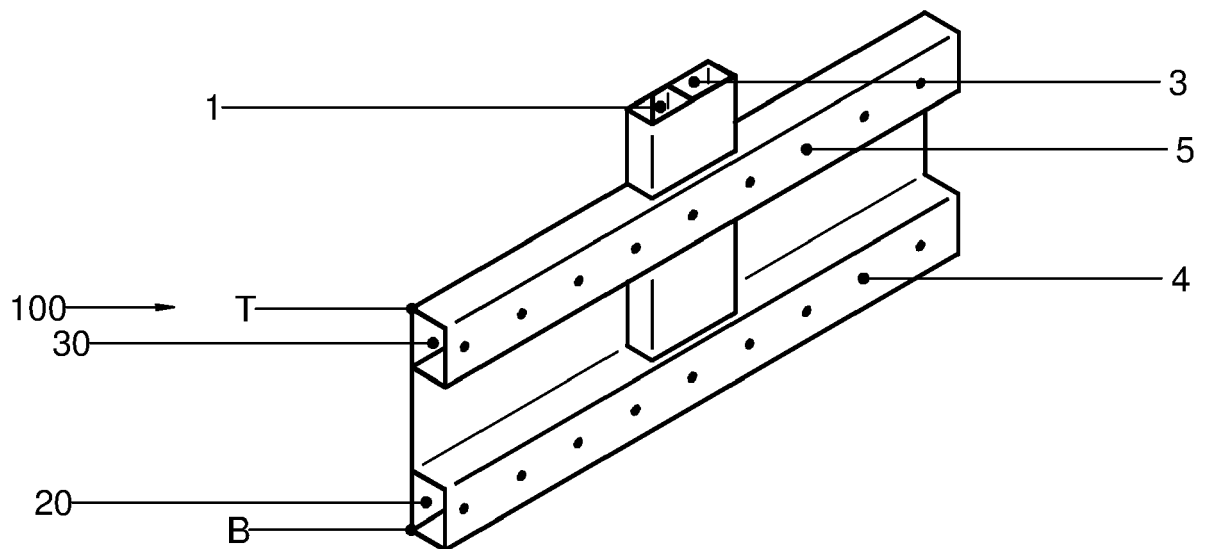
[Fig. 4]



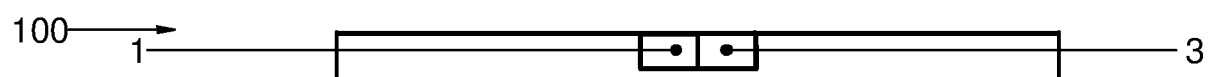
[Fig. 5]



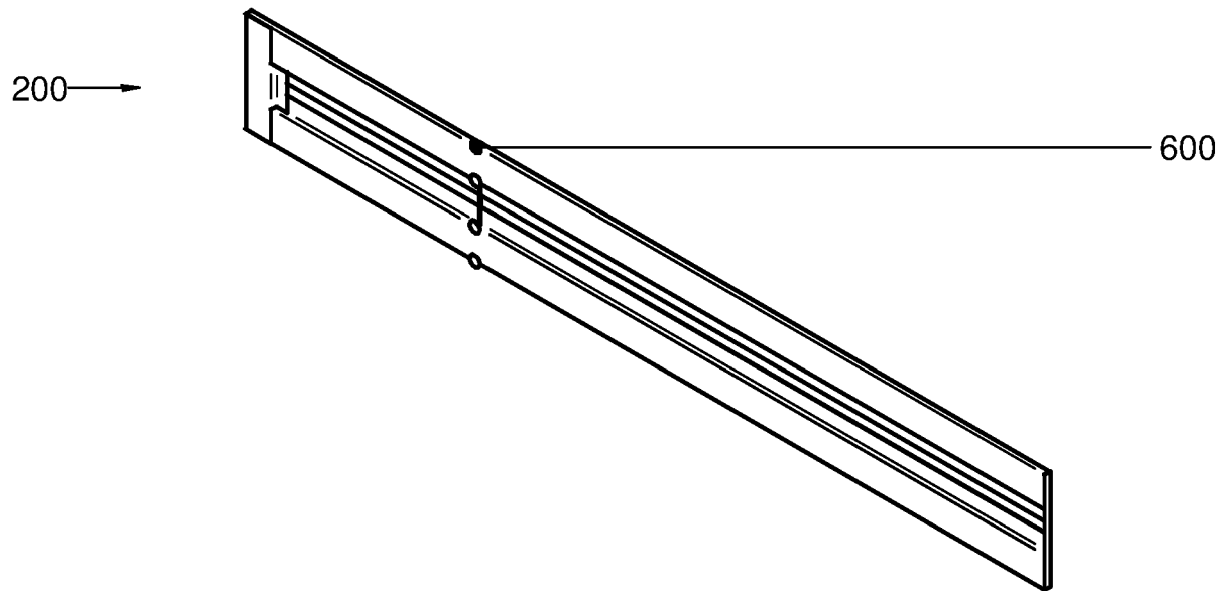
[Fig. 6]



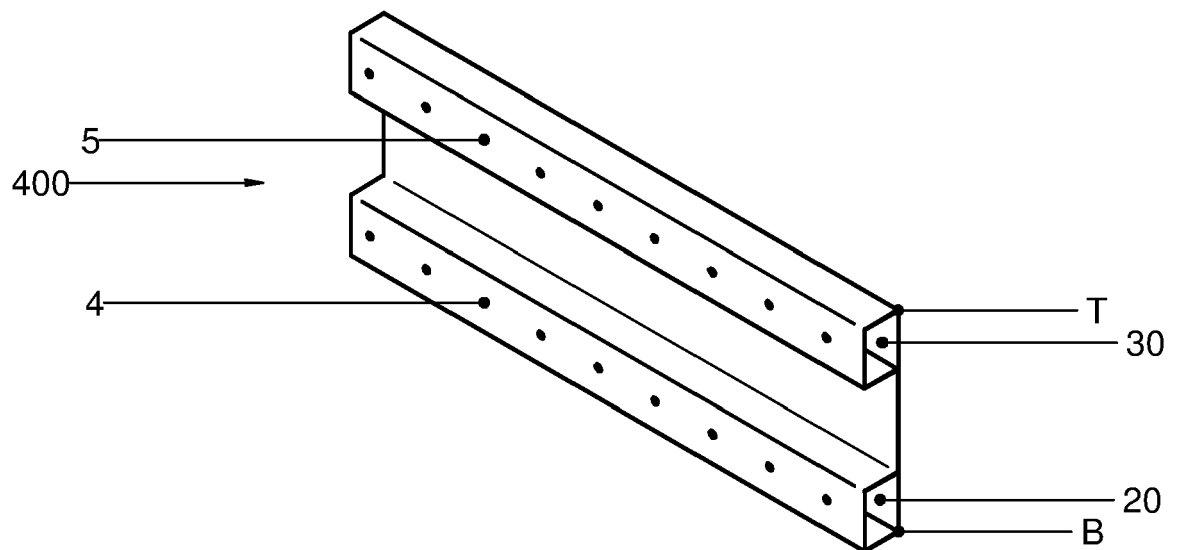
[Fig. 7]



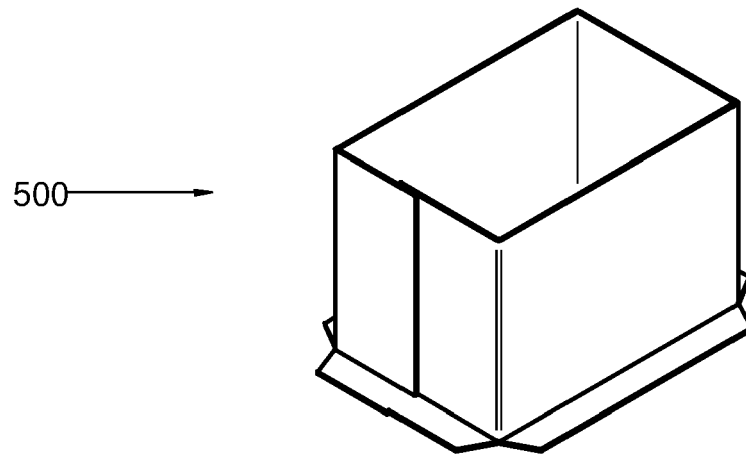
[Fig. 8]



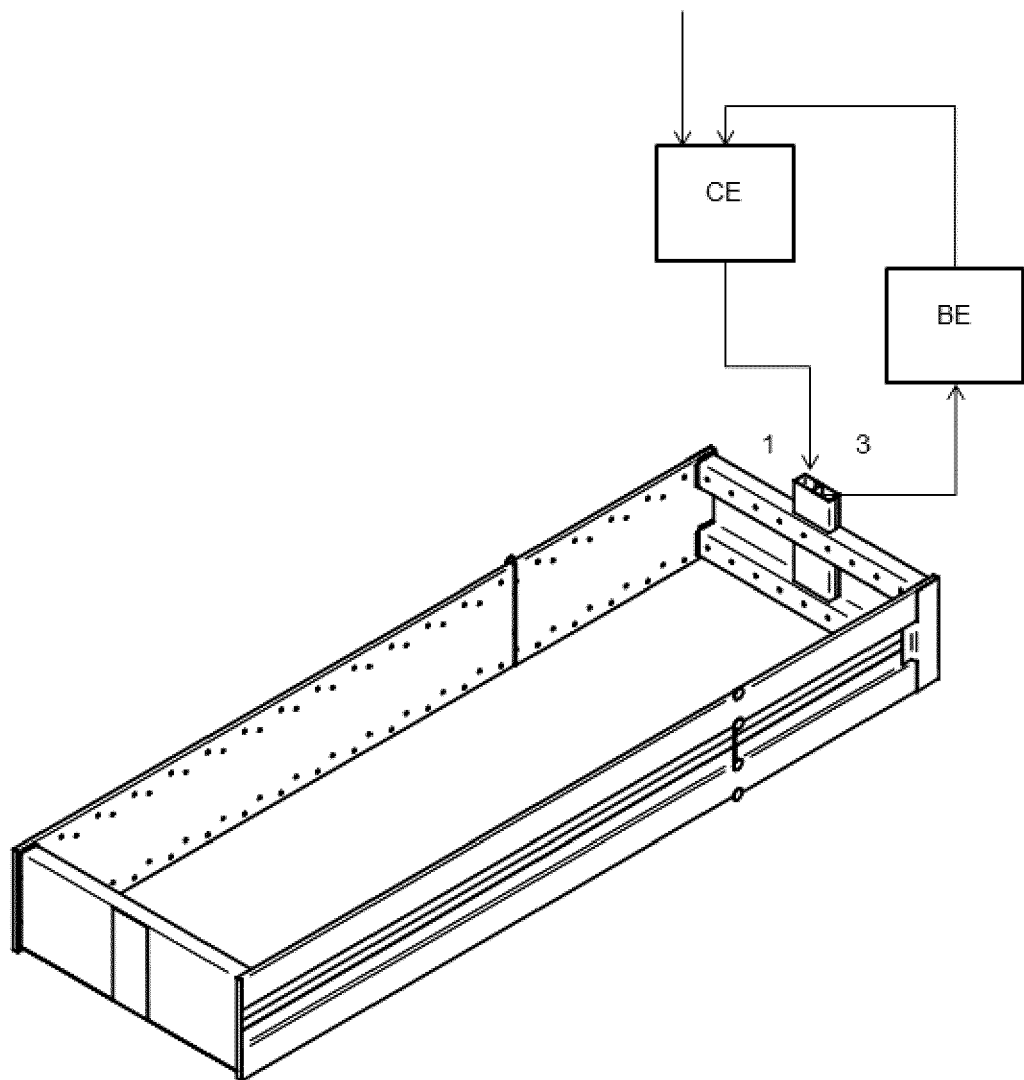
[Fig. 9]



[Fig. 10]



[Fig. 11]





## EUROPEAN SEARCH REPORT

Application Number  
EP 20 02 0182

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| 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<br>A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | DE 29 43 251 A1 (GROENEWEGEN ARIE PAUL)<br>14 May 1981 (1981-05-14)<br>* figures *<br>* page 11 - page 15 *<br>----- | 1-6<br>7-9                                       | INV.<br>A61G17/00<br>A61G17/04          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                      |                                                  | TECHNICAL FIELDS SEARCHED (IPC)         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                      |                                                  | A61G                                    |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                      |                                                  |                                         |
| Place of search<br>The Hague                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                      | Date of completion of the search<br>20 July 2020 | Examiner<br>Koszewski, Adam             |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                                                                                                      |                                                  |                                         |

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EPO FORM 1503 03/82 (P04C01)

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| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|-------------------------------------------|---------------------|----------------------------|---------------------|
| DE 2943251                                | A1                  | 14-05-1981                 | NONE                |
| -----                                     |                     |                            |                     |

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

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- DE 19812217 A1 [0004] [0006]
- US 7926295 B2 [0005] [0010]
- DE 2943251 A1 [0017]