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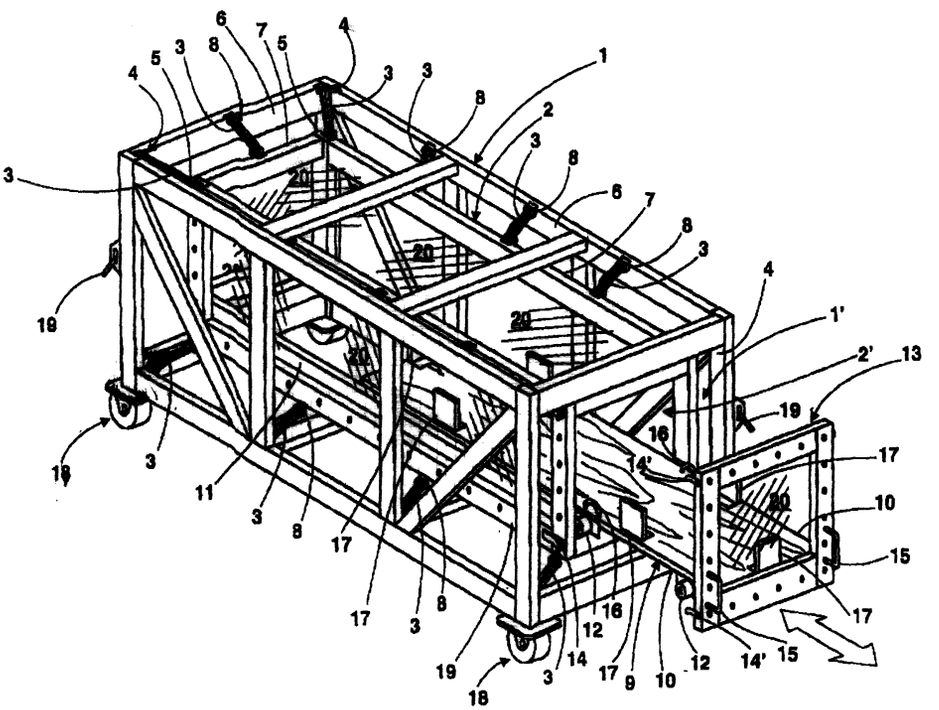
(54) A container for the transport and/or storage of fragile products

(57) A container for the transport and/or storage of fragile products in general comprises an external structure (1) and an internal structure (2) suspended inside the external structure through elastic materials (3) that stretch along the gap set up between both structures, which allow to elastically absorb fortuitous impacts received by the external structure with no damage of the products inside. The internal structure includes a sliding tray (9) that carries the products, fixed along the respective guides (11) fixed inside the internal structure in order to easily insert and remove the tray from an opened edge of the external and internal structures. In an edge of the tray has been set up a lid (13) for opening the seal of the internal structure to which it is fixed through clasps (14), at the same time immobilizing the tray. The products are fastened over the tray through strips or adjustable metal bands, which edges get fixed to hooks (16) placed along the edges of the tray.



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Description

[0001] The present invention refers to a container for transport and/or storage of products in general. More precisely, it is related to a container that allows to protect fragile products, even extremely fragile products, against the effects of any impact that might receive the container during the transport, load, stowage, storage or any other circumstance in which the mentioned container might be exposed to such impacts.

[0002] As it is well known, transport and storage of models require to take extreme precautions about crating in order to make sure these items will arrive in perfectly conditions to its final destination. This is specially necessary when these fragile products have to be moved through different means of transport such as trucks, ships, planes, etc. from its place of origin (i.e. factories, warehouses or stores) to its final destination.

[0003] In the same way, the risk of break of fragile products increases proportionally to the difficulties in getting an adequate crate. This difficulties arise from the shape, structural particularities and materials of the products to be transported.

[0004] In other words, it is easier packing and protecting products that have a regular shape, an external and continuous surface than protecting those products whose structural complexity do not allow the use of conventional elements for protection such as expanded polyurethane sheets, spongy materials, corrugated cardboard, etc. To give some specific examples of products of such complex shapes, we can mention certain sculptures, architecture models or shipmodels and aircraft models.

[0005] It is exactly in the case of the examples mentioned above that the notable advantages of the container, object of the present invention become evident. In fact, as it will be clearly understood more ahead (reference is the drawing that illustrates this invention) the applied concept through which becomes possible the transport of fragile products assuring an optimal protection of the same, is the transformation of cynetic energy of any fortuitous impacts received by the container, in such way these impacts do not affect the product or products lodged in the mentioned container, even intense or repeated such impacts and even when the products be extremely fragile or, due to its size and/or weight be prone to easy breaking before a sudden movement and impact against a relatively rigid surface.

[0006] Until now we do not have knowledge about the existence of containers that join the special and advantageous characteristics of the invention vindicated. For what we consider that with this invention we are contributing with a new and effective solution to the problems of transport and/or storage of fragile products.

[0007] Therefore is object of the present invention to provide a container for the transport and/or storage of fragile products in general, that comprise an external structure and an internal structure, suspended inside the external structure through elastic materials which set up a gap between both structures. The internal structure includes a tray that carries the products to be contained.

[0008] To clarify and understand the object of the present invention, we present a drawing with the figure represented in a preferential way of realization, only as an example. In this drawing can be seen a view of this container and also is illustrated the carrier tray partially removed.

[0009] With reference to the attached figure, can be observed that this container for the transport and/or storage of fragile products in general is made up of a tubular frame, for example, made of metallic tubes that comprise an external structure 1 and an internal structure 2, which is suspended inside the mentioned external structure 1 through a plurality of elastic elements (in the described preferential realization) that consist of rubber strips 3. These rubber strips stretch out, on one side, between respective faced vertex inside 4 and outside 5 (or well from the proximities of the same vertex) and on the other side, the rubber strips stretch out between respective faced edges or arris, inside 6 and outside 7 of the mentioned structures 1 and 2 respectively.

[0010] As can be observed, the rubber strips 3 set up a gap between both structures 1 and 2, to which are fixed from its faced edges through hooks 8 fixed in the mentioned structures 1 and 2. Therefore, and thanks to the elasticity coefficient of the rubber strips 3 (chosen according to the dimensions of the container and the esteemed average of weight of the inside structure 2 and the charge to be transported) results the transformation of fortuitous impacts that might receive the external structure 1 in work of elastic strain of the mentioned strips 3. In other words, as consequence of such impacts and due to the fact it is suspended, the internal structure 2, will react following a soften oscilating movement that will not affect the integrity of the products lodged inside the container and, in particular, inside the internal structure 2.

[0011] To correctly lodge the products in the container, inside the internal structure 2, it is included a carrier tray 9, where the products are fixed to, for example, through ropes, tapes or metal bands available in the market, which are not illustrated in order to make the figure more clear. The characteristics of this last related to width, length and resistence will depend on the shape and weight of the articules to be fixed to the mentioned tray 9.

[0012] It can be observed that tray 9 is disposed in a sliding way along the internal structure 2, for what it presents a couple of faced side edges 10 which coupled to the corresponding sliding guides 11, made up of rails of transversal section in "U", fixed in its lower part in the inside of the mentioned structure 2. In order to make the tray 9 be softly slided along the guides 11, in its side edges were built-in sets of wheels 12 that fit in the hole with shape "U" of the mentioned sliding guides 11.

[0013] Can be observed this container shows an open edge where the external structure 2 presents an opening 1' through which can be accessed the internal structure 2. This last presents an opening 2', which allows the access to the carrier tray 9, entrance and exit. Besides, a lid 13 to close the opening 1' is fixed (perpendicularly) to the edge of tray 9. This lid 13 and the perimeter of the mentioned opening 1' include sets of clasps which parts are marked with the reference numbers 14 and 14' for the adjustment of lid 13 and, consequently, the adjustment of tray 9 to the interal structure 2. Besides, the lid 13 externally includes handles 15 to make more comfortable the sliding of the tray 9 procedures.

[0014] It is worthy of remark that in order to immobilize the product or products inside the structure 2 of the container, the edges of the tray 9 include hooks for anchorage 16 in respective edges of the tapes or adjustable metal bands, previously mentioned, to conveniently fasten such products This allows hold tightly the products whether these are packed in corrugated cardboard, acrylic, glass, etc. boxes or when, due to its characteristics, it is needed or conveniently lodge the products unwrapped (for example this is the case of very big sculptures and also different types of models).

[0015] In case the products are packed in fragile or malleable boxes has been also fixed in the edges of tray 9 several tops 17 that help to avoid such boxes sliding laterally and/or longitudinally over the tray 9. Preferently, the faces of such tops 17 opposed to the boxes are coated with a small cushion, for example, made of plush, rubber or any other similar material, in order to avoid deterioration of the mentioned boxes.

[0016] On the other hand, to easy push along this container over floors and ramps, the external structure 1 is built-in over a set of wheels 18 with a turn of 360°.

[0017] For the same purpose, the structure 1 externally includes (preferently in its opposed edges) means of hooking and traction made up of ringbolts 19.

[0018] Due to the fact the container, in general, frequently use to be left out in the open and exposed to wind and water, dust, dirty, sun heat, etc, with the purpose of protecting the products lodged on carrier tray 9, has been fixed to the internal structure 2 a coat made of sheets 20, for example polycarbonate sheets, preferently transparent, to visualize and control the product/s lodged and fastened on tray 9. Besides, the mentioned sheets 20 help protecting the products and/or boxes against breakings caused by rigid and heavy elements that unintentionally might fall or impact the same.

[0019] As it will be understood, with no intention of beeing away from the constructive and functional principle of the present invention as it is vindicated, in practice this container may adopt different shapes that will satisfy the needs or technical requirements of the products to be contained. In fact, in the preferential realization that was illustrated the external and internal structures have a quadrangular geometry. But it can adopt other shapes, for example, built with a pair of circular transversal section tubes, being an internal tube suspended inside the external tube also through elastic materials, ropes or strips. Alternately, such elastic materials may be fixed between the external tube and the internal tube through hooks. This elastic materials may also go through slots or holes done in both tubes for this purpose. The carrier tray may be placed inside the internal tube the same way it was placed in the described and illustrated realization, as well as the lid that seals the corresponding opening.

[0020] Undoubtedly, the shape of the internal and external structures of this container may present the more diverse configurations, developed from the same principle of functioning, that is why it is considered not necessary or relevant the description and illustration of the same.

[0021] Having specially described and defined the nature of the present invention and the way the same should be put in practice, it is declared as property and exclusive right:

Claims

1. A container for the transport and/or storage of fragile products in general, characterized because includes an external structure and an internal structure suspended inside the mentioned external structure through elastic materials that set up a gap between both structures, including the internal structure a tray for carrying the products to be contained.

2. A container according to vindication 1, characterized because the mentioned structures are quadrangular and the mentioned elastic materials, stretch out between the proximities of respective faced internal and external vertex of mentioned internal and external structures of the container.

3. A container according to vindication 1 and 2, characterized because the mentioned structures are quadrangular and the mentioned elastic materials stretch out between the respective faced internal and external edges of the mentioned internal and external structures of the container.

4. A container according to any vindications 1 to 3 characterized because the mentioned elastic materials are rubber strips that stretch out in the mentioned gap between both external and internal structures and to which are fixed through hooks fixed in the mentioned structures.

5. A container according to any precedent vindications characterized because the mentioned carrier tray is placed in a sliding way inside the internal structure,

presenting a pair of facing side edges fixed to the corresponding sliding guides fixed in the internal structure.

6. A container according to any precedent vindications, characterized because has an opened end where the external structure set up an opening access to the internal structure and this last one presents an opening access to the carrier tray.

7. A container according to vindication 6, characterized because the mentioned tray presents an edge where has been fixed, perpendicularly to the tray, a lid to close the opening of the internal structure of the container. The mentioned lid and the perimeter of the mentioned opening include clasps to fix the lid and, consequently, to fix the tray to the internal structure.

8. A container according to vindications 5 to 7, characterized because the mentioned faced side edges of the tray include sets of wheels that wedge in the mentioned sliding guides made up of reels of transversal section with "U" shape.

9. A container according to any precedent vindications, characterized because the mentioned external and internal structures are structures made up of metallic tubes.

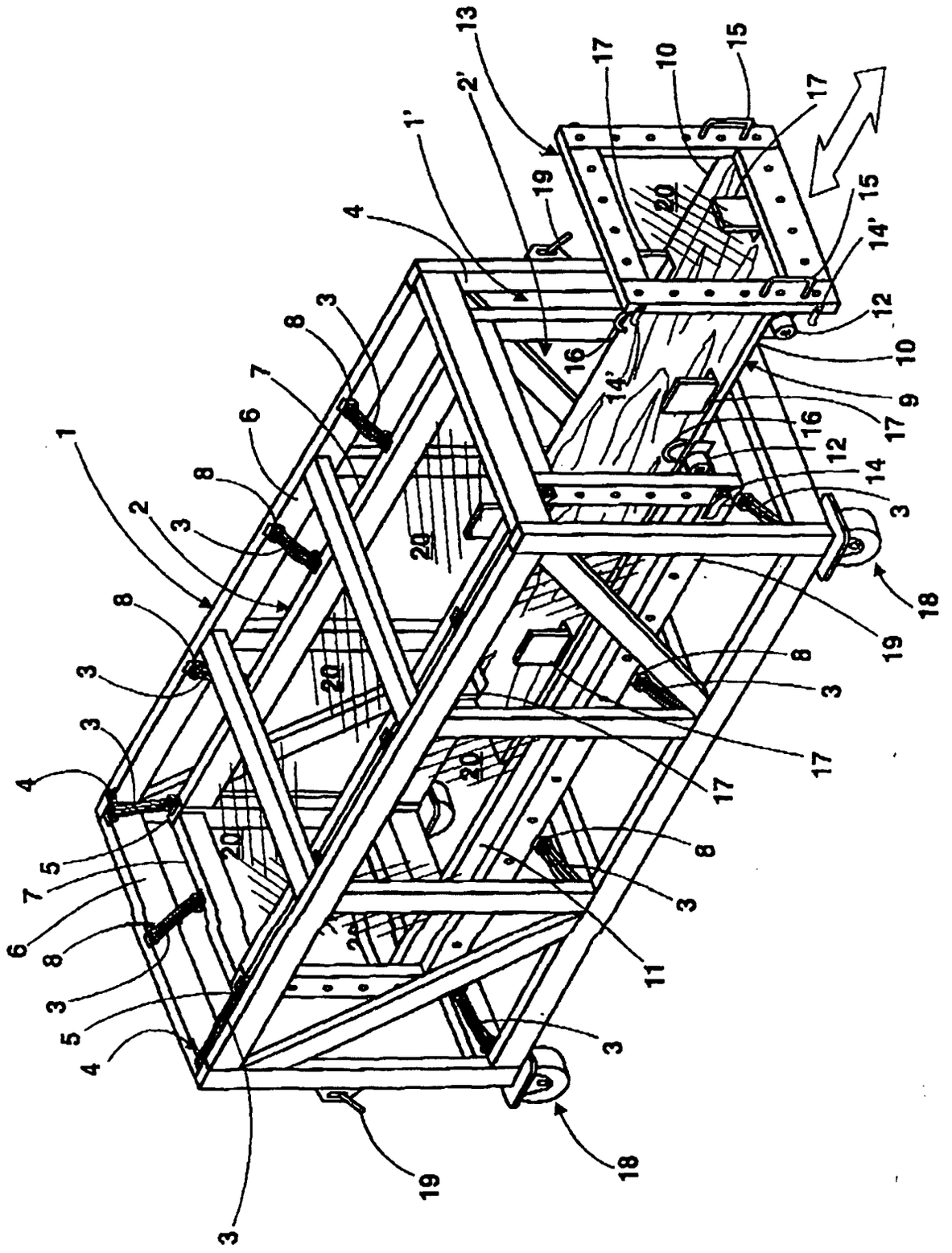
10. A container according to any precedent vindications, characterized because the mentioned carrier tray has fixed in its edges a plurality of hooks of anchorage in respective edges of the tapes or adjustable metal bands for fastening the products lodged on the mentioned tray

11. A container according to any precedent vindications, characterized because the mentioned carrier tray has fixed in its side edges a plurality of tops for the products lodgded on the mentioned tray.

12. A container according to any precedent vindications, characterized because at least the mentioned internal structure includes a protective coat made of transparent polycarbonate sheets.

13. A container according to any precedent vindications, characterized because the external structure is set up over a set of wheels with a twist of 360°.

14. A container according to any precedent vindications, characterized because the external structure includes means of hooking and traction of the container made up of ringbolts.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EUROPEAN SEARCH REPORT

Application Number
EP 01 50 0069

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A	* page 3, line 53 - line 81; figures 5-7 *	12,14	
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A	* page 1, line 35 - page 2, line 8; figure 2 *	1,2,7, 13,14	
Y	FR 2 755 098 A (COUSIN ROBERT JOSEPH ERNEST) 30 April 1998 (1998-04-30)	5	
A	* page 2, line 18 - line 31; figure 2 *	7	
A	US 4 877 136 A (MIZUNO KEIICHIRO ET AL) 31 October 1989 (1989-10-31) * figure 16 *	13	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	18 June 2001	Bridault, A

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 01 50 0069

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