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(72) Inventor: **The designation of the inventor has not yet been filed**

(54) **Plan in iron wire interlocking**

(57) Model " Plan in iron wire interlocking " is for producer of plans in iron wire, so that they can make plans in iron wire that are assembled using the interlocking panels or other vertical structures equipped with specific locations.

The working method, comparing the technique currently used, the following differences:

➢ Cutting sheet metal, suitably shaped (called plates), which constitute the horizontal structure of the plan;
➢ Solder the wires to the plates;
➢ Cutting suitably shaped sheet metal which constitutes the fixing system of the plan to the vertical support (shelf);
➢ Assembled by iron wire plan to the shelf;
➢ Application of clips out stop buttons.

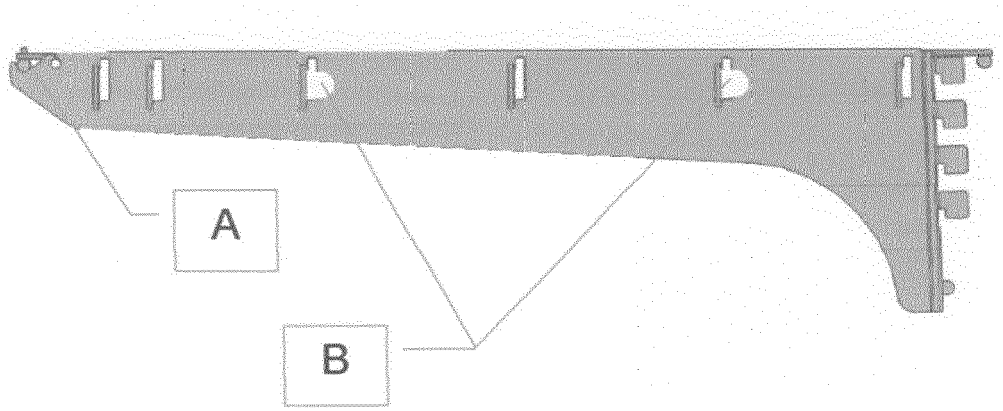

Fig. XV

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Description

[0001] The solution proposed in the present utility model allows the realization of plans in iron wire by means of a simplified manufacturing process. This utility model is addressed to the field of production plans made of iron wire.

[0002] The solution proposed in the present utility model allows the realization of plans in iron wire which is obtained of joining the plan to the two side supports. These are join on the wall units.

[0003] There are currently on the market plan in iron wire, which are realized as shown in Fig. I.

[0004] To realize the structure of the top wire (Fig. I (A)), must follow the following phases:

1) Cutting sheet metal with a rectangular shape which support (flat) for the wire (sizes vary depending on the characteristics - size and mechanical strength desired);
2) Cutting the wire (sizes vary according to the size of the plan to be implemented);
3) Assembly by spot welding the wires to the plates constituted by plates made in step 1.

[0005] Once built the structure of the top wire (Fig. I (A)), you must perform the following steps to anchor the plane to the vertical structure:

4) Cut the sheet, which will be the system of intermediate coupling between the top wire and the bracket (Fig. I (B));
5) Fold the sheet (Fig. II).
6) Welding of steel wire in the plane (Fig. III);
7) Possible cleaning at the points of welding;
8) Cutting the sheet metal (suitably shaped) that will constitute the fixing system of the top piece of wire (shelf) to the vertical support;
9) Assemble the shelf with the top wire (specific docking systems such as screws).

[0006] It is emphasized that the shelf, having the function of coupling with the movable wall, must be suitably shaped to allow:

➢ the fixing of the top wire;
➢ the fixing of the plan to the the vertical wall equipped.

[0007] Eventually you will get a product ready to be installed on wall systems currently available on the market (Fig. IV).

[0008] They consist of vertical axes (Fig. IV (A)) suitably perforated to allow the interlocking of the horizontal planes (Fig. V (A)).

[0009] Currently analyzing what is present on the market and in relation to the growing need on the part of manufacturers to optimize cost and production time, it is making a continuous searc for processes that allow to improve business performance.

[0010] Through the use utility model "Plan in iron wire interlocking " you can make the plans of iron wire through the reduction of the phases of manufacturing process and reducing the amount of raw materials, with a net cost savings and reduction of processing times.

[0011] The plans achievable may have the most varied shapes and dimension and can be achieved through the use of wires and plates of different characteristics in function of the required strength.

[0012] The utility model "Plan in iron wire interlocking" allows the realization of horizontal planes having the same features than those in iron wire at the time available on the market, using a work cycle simplified.

[0013] The structure of the plan in iron wire (Fig. VI) is obtained by:

1. Cutting sheet metal forming the flat, the horizontal structure of the plan, properly shaped (sizes vary depending on the characteristics - size and mechanical strength desired) (Fig VI (B));
2. Cut the wire (sizes vary according to the size of the plan to be implemented);
3. Assembly by spot welding the wires to the flat made in step 1 (Fig VI).

[0014] As indicated in step 1, the plates that make up the flat must be cut by suitably shaping as shown in detail in Figure VII A and Figure VII B.

[0015] The left side of the sheet has the shape illustrated in Figure VII A:

➢ The letter A shows the shape to be obtained by cutting;
➢ The letter B illustrates the points in correspondence of which will be welded iron wires.

[0016] The right side of the sheet has the shape illustrated in Figure VII B:

➢ The letter A shows the shape to be obtained by cutting;
➢ The letter B illustrates the points in correspondence of which will be welded iron wires.

[0017] Following the construction of the structure of the top wire (Fig. VI), in order to fix the plane to the vertical structure, you must do the following:

4. Cutting the sheet metal that will form the fastening system of the plane in wire to the vertical support (shelf) (Fig. VIII);
5. Assembling the bracket with the top wire.

[0018] Also in designing the shelf, which must be made as illustrated in Figure VIII. Account must be taken of the following details:

➢ Template for the frame of the top piece of wire (Fig VIII (A)) whose detail is shown in Figure VIII;
➢ Template for safety lock of the plane (Fig. VIII (B));
➢ Hole for painting step (Fig. VIII (C));
➢ Holes for fastening the clips out stop button (Fig. VIII (D));
➢ Pins for fixing the floor to the vertical wall system (Fig. VIII (E)).

[0019] Once the shelf assembly is passed between the top wire and the mounting plate through three phases:

1. Insertion of the structure of the plane in iron wire in the shelf in correspondence with the specific holes (Fig. X). The detail is shown in Figure XI;
2. Interlocking of the plane of wire by the application of manual force (Fig. XII). The detail is shown in Figure XIII;
3. Application of the buttons clips (Fig. XIV) pull-out stop in correspondence with the specific seats (Fig. XV (B)).

[0020] These operations must be carried out on both sides of the iron wire.
[0021] You have a product ready to be installed on wall systems currently available on the market (Fig. IV).
[0022] These walls are constituted by vertical axes (Fig. IV (A)), which are suitably perforated to allow the interlocking of the horizontal planes. (Fig. V (A)).
[0023] Compared to the technique of realization of plan in iron wire at the time used, the present utility model allows to obtain plans in iron wire having the same characteristics in terms of performance but with the following advantages:

➢ Implementation of the plan through a more simplified procedure that avoids the following phases:

○ or no longer have the intermediate support (Fig. I (B)) which allows the fixing of the structure of the plane in wire to the bracket;
○ or not you should make the system folders intermediate coupling (Fig. II (A));
○ or not you have the seals that allowed the assembly of the structure plan in wire to an intermediate fastening system (Fig. III). We had to make two welds per sheet forming the structure of the top wire (one for each side);
○ or not you have to do any cleaning at the points of welding;

➢ The top wire obtained guarantees the tightness of the coupling device and therefore the safety of users, by:

○ Locking or security: the iron wire on the front of the plane snaps in the specific location;
○ Presence of buttons or clips on both sides which prevent the plan to disengage from specific locations (block of the mechanical type.

[0024] The product obtained by application of the utility model "Plan of iron wire interlocking" allows to companies that make the realization of articles of iron wire, the working of plane in wire interlocking used for the realization of exhibitors by means of a working cycle simplified.
[0025] The plan in iron wire interlocking obtained can be used in commercial field for the realization of exhibitors, in the industrial field for the realization of shelves for use in offices, local exposure, etc..
[0026] An example of a exposure produced by use of the "plan in iron wire interlocking" is shown in Fig XVI. The exhibitor illustrated has a structure fixed to the ground (Fig. XVI (A)) and having the vertical uprights fitted with specific holes for the interlocking of the plan (Fig. XVI (B)). In this case, steps were taken to the assembly of two plan made by means of the utility model "Plan of iron wire snap" (Fig. XVI (C)).

Claims

1. Realization of plan in wire **characterized by** a simplified production process, with a smaller number of processing steps and material carrying consequences advantageous in economic terms related to reduced production time;

2. Realization of plan in wire by use of less material;

3. Realization of plan in wire whose locking system should be simple and ensure the tightness thanks to the specific template for the frame of the shelf to support the coupling to the wall, through the use of clips out stop buttons;

4. Possibility of interfacing with products on the market having the characteristics desired dimensional and strength a lower cost, compared to a similar product made by the techniques of the present embodiment.

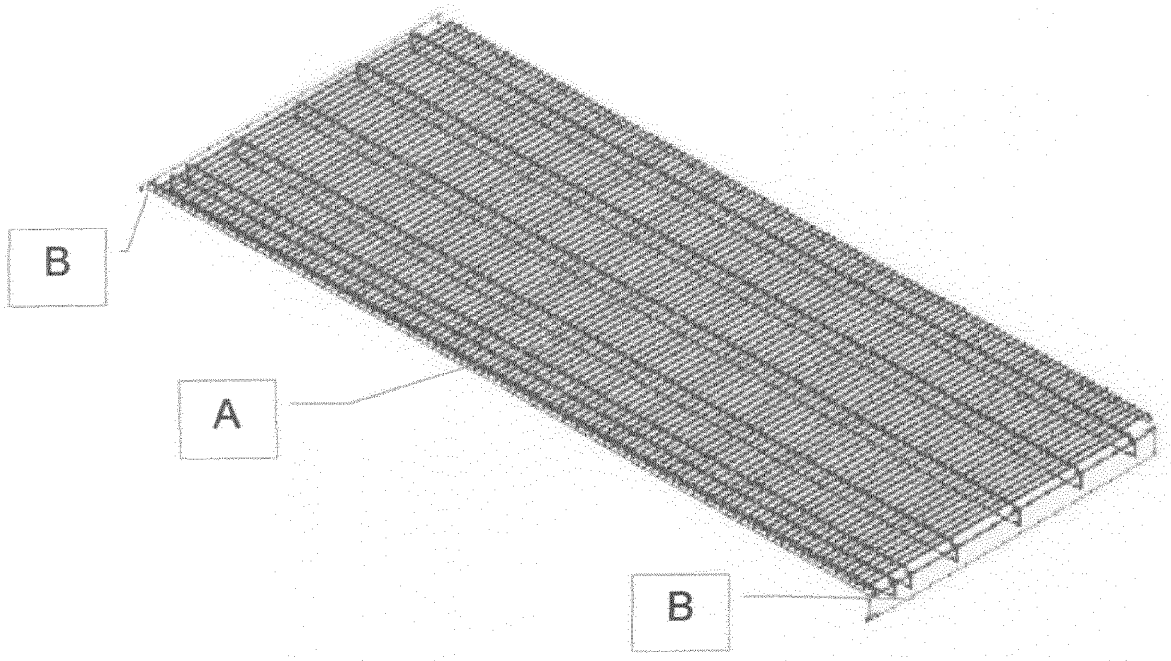

Fig. I

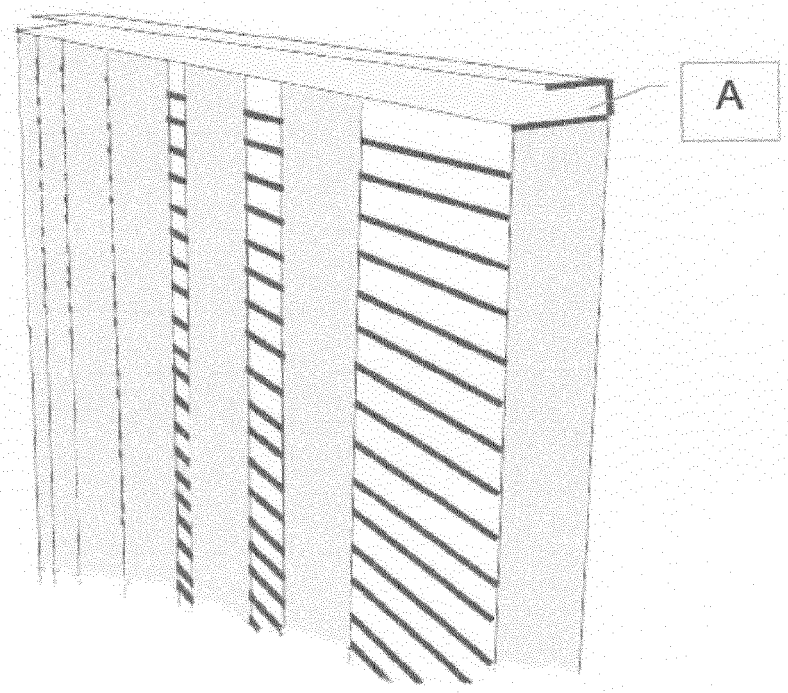

Fig. II

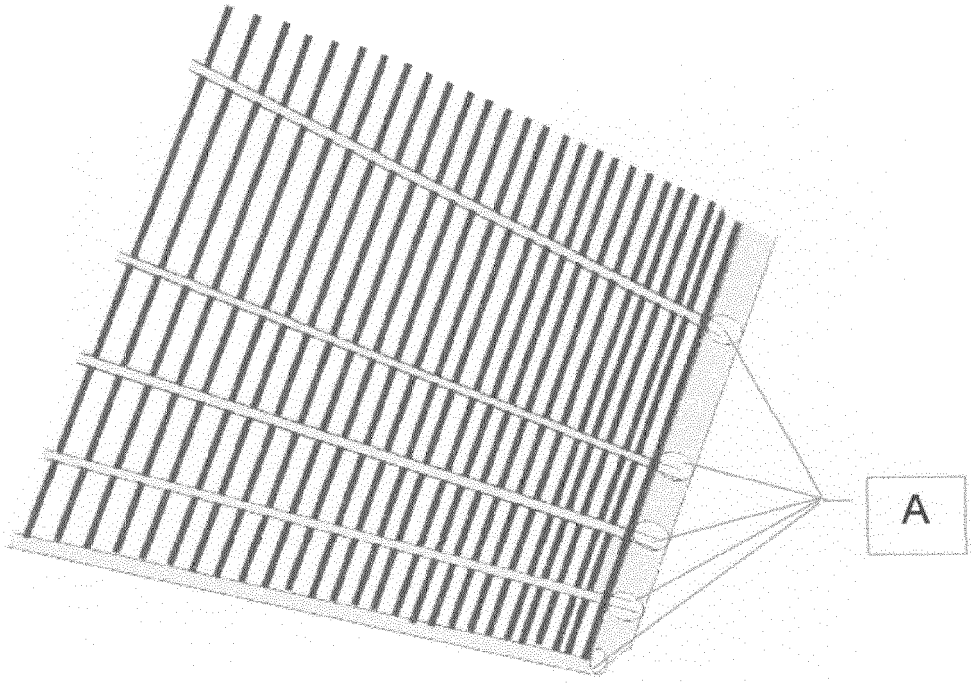

Fig. III

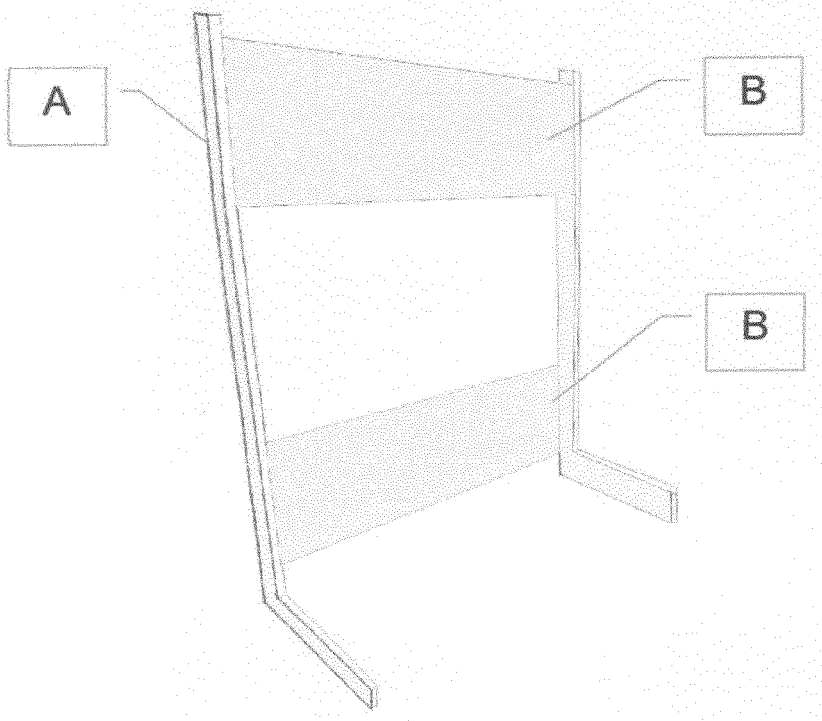

Fig. IV

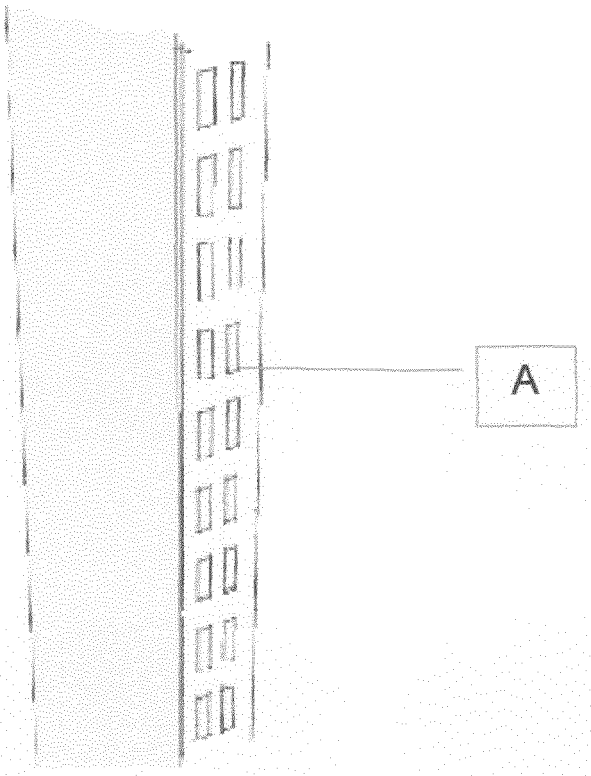

Fig. V

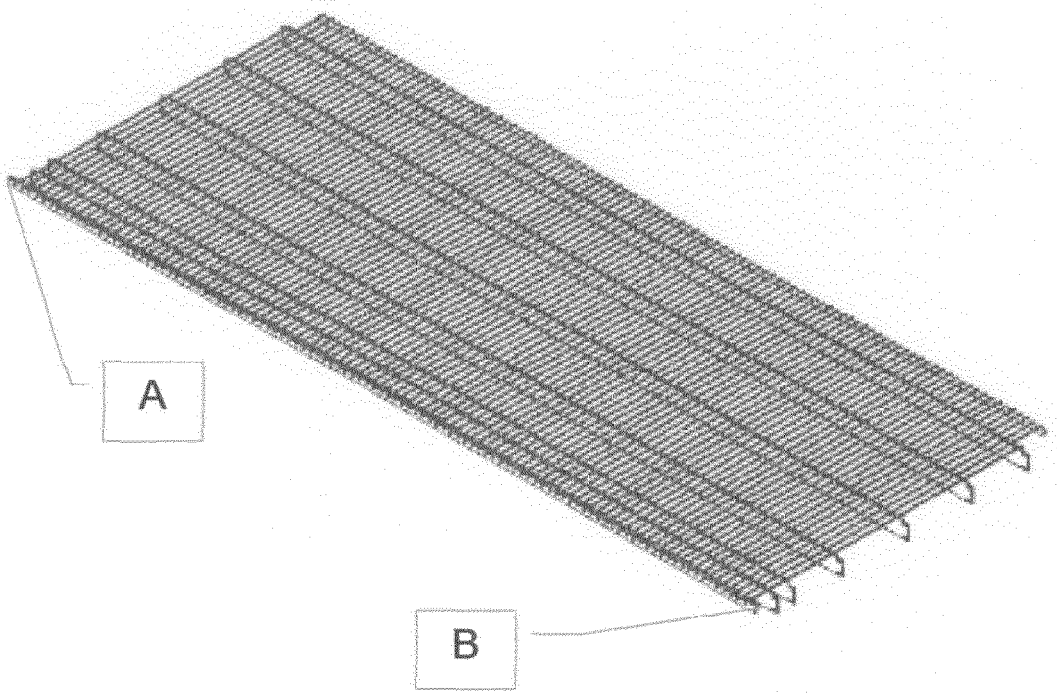

Fig. VI

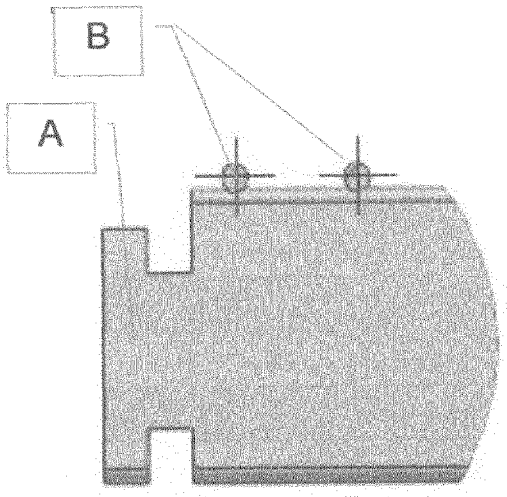

Fig. VII A

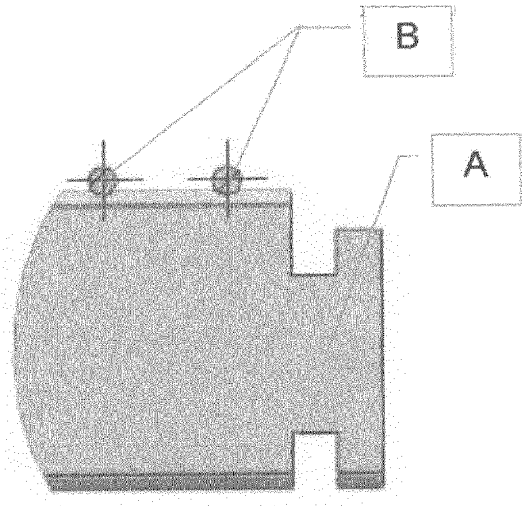

Fig. VII B

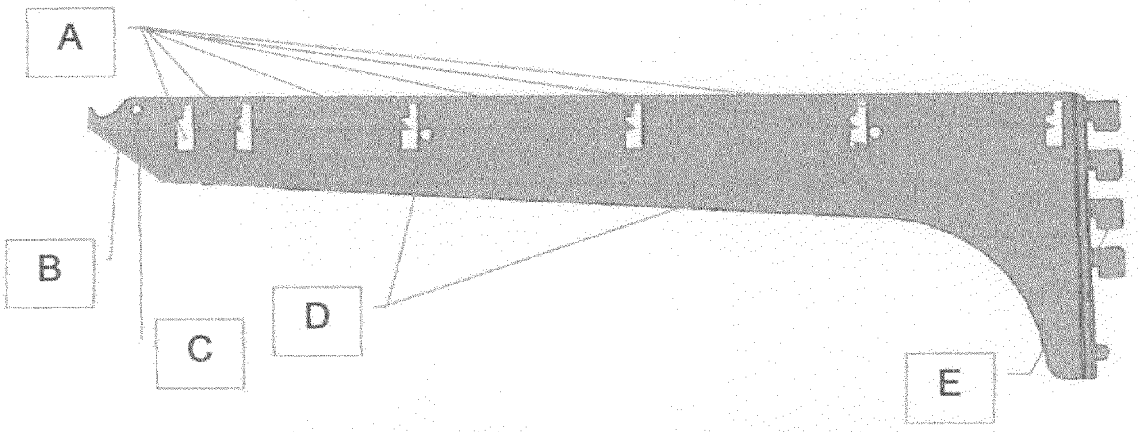

Fig. VIII

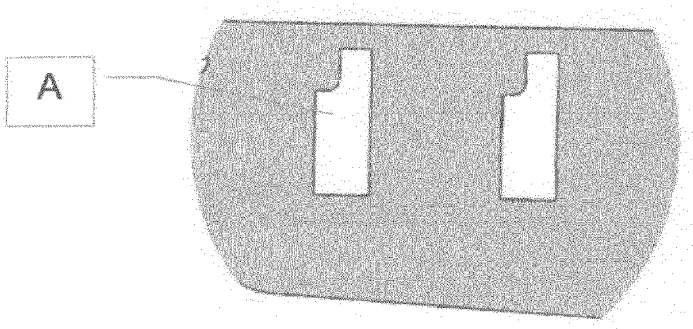

Fig. IX

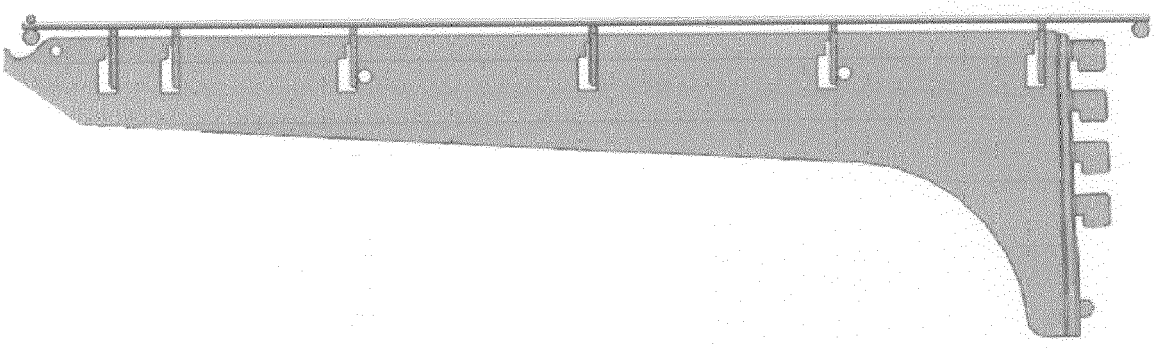

Fig. X

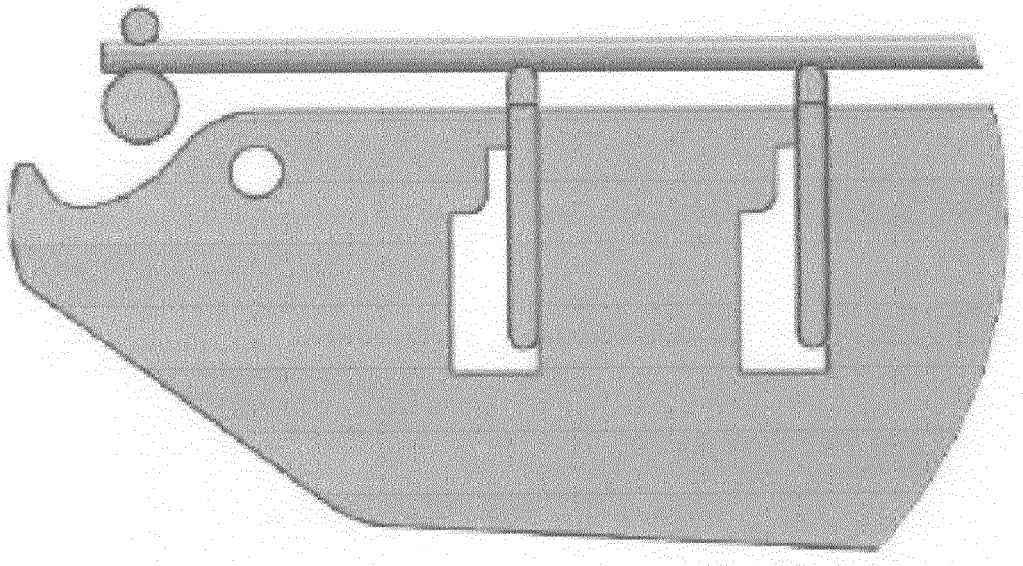

Fig. XI

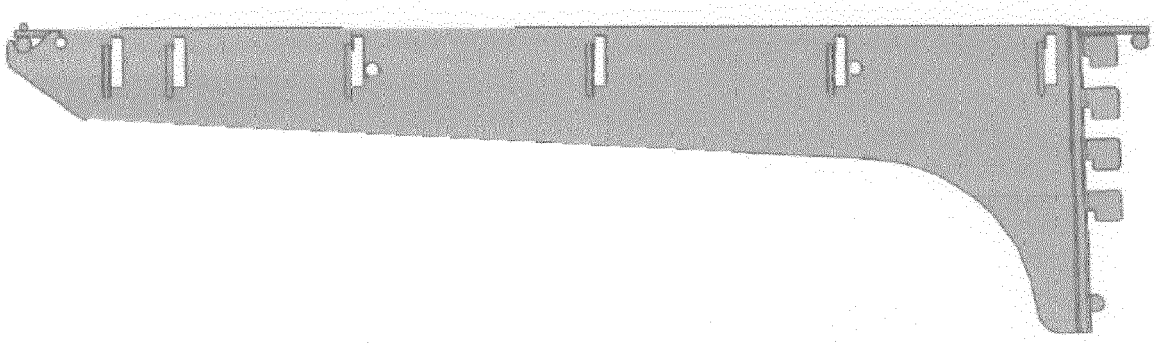

Fig. XII

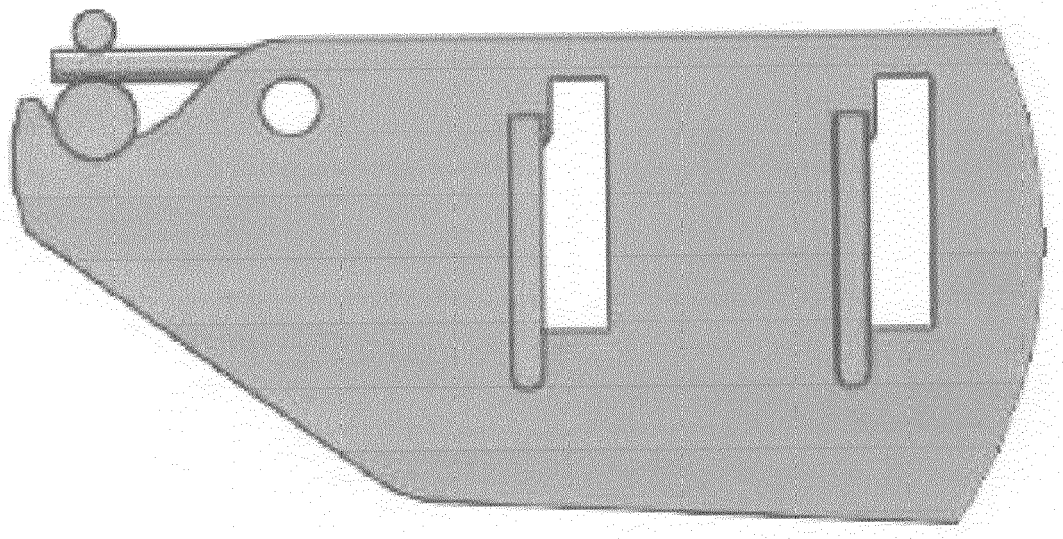

Figura XIII

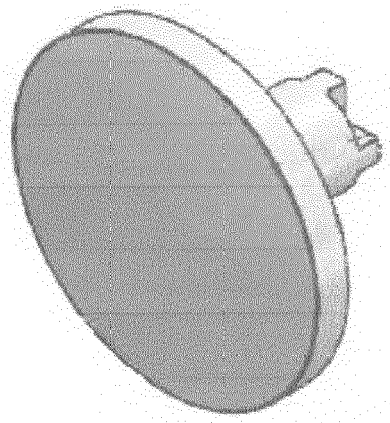

Fig. XIV

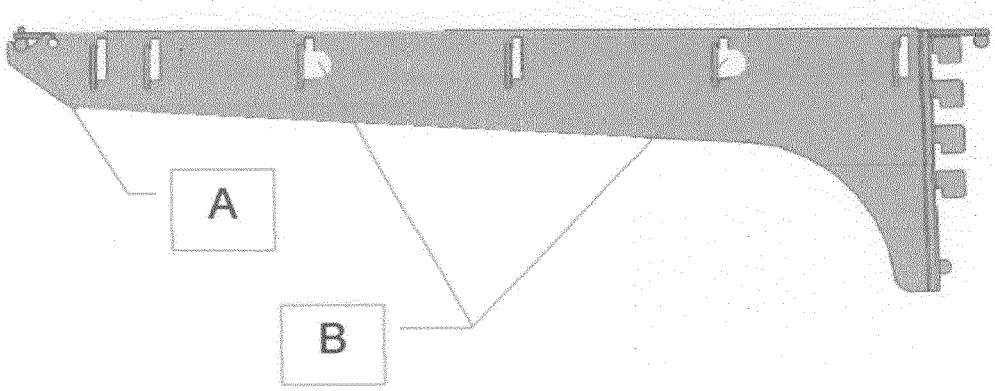

Fig. XV

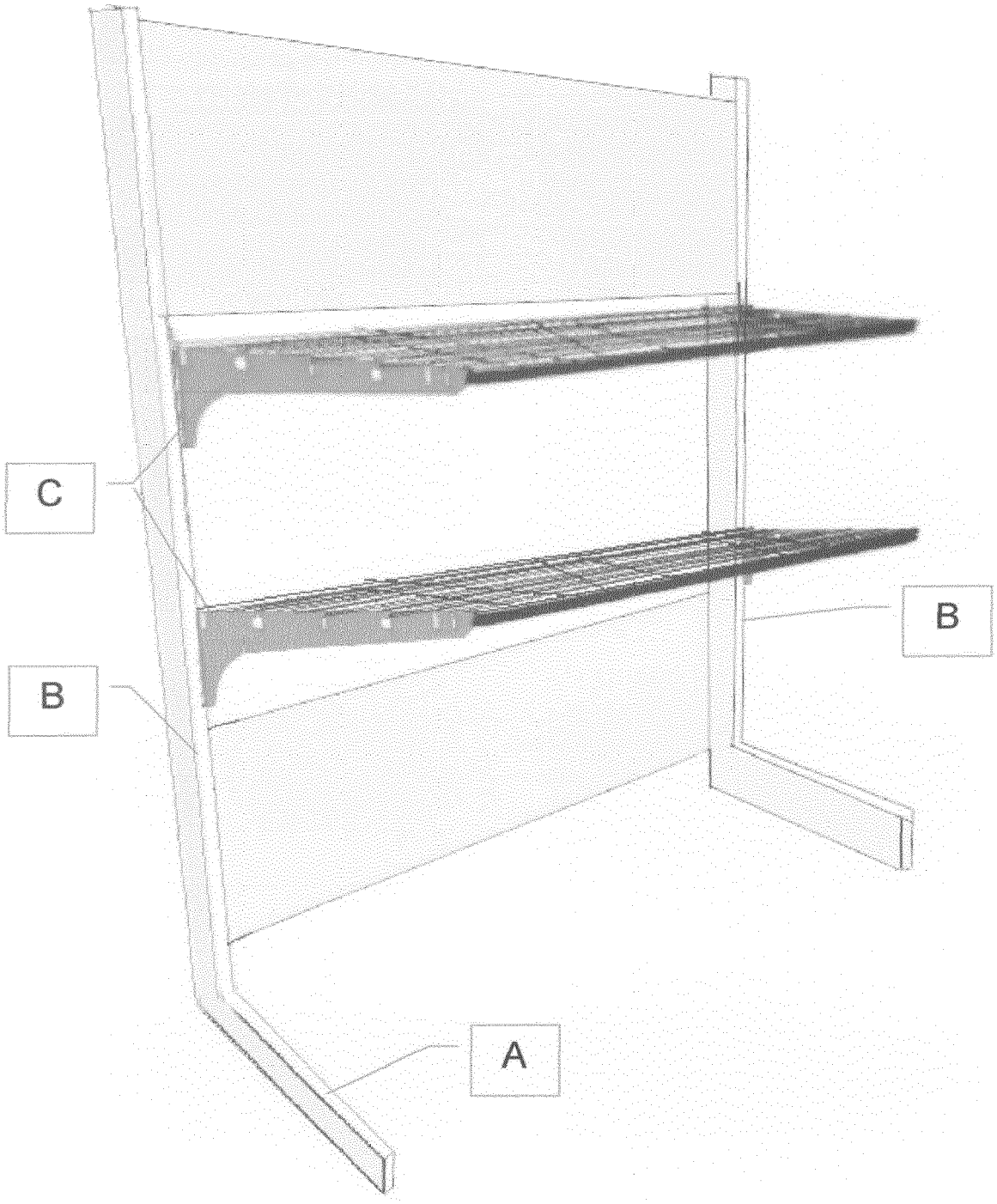

Fig. XVI

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PARTIAL EUROPEAN SEARCH REPORT

under Rule 62a and/or 63 of the European Patent Convention. This report shall be considered, for the purposes of subsequent proceedings, as the European search report

Application Number
EP 12 42 5092

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	EP 2 389 836 A1 (WANZL METALLWARENFABRIK KG [DE]) 30 November 2011 (2011-11-30) * the whole document *	1-4	INV. A47B96/02 A47F5/13
X	EP 2 389 838 A1 (ASSMANN LADENBAU LEIBNITZ GMBH [AT]) 30 November 2011 (2011-11-30) * the whole document *	1-4	
X	US 6 024 333 A (RAASCH JASON J [US] ET AL) 15 February 2000 (2000-02-15) * the whole document *	1-4	

TECHNICAL FIELDS SEARCHED (IPC)

A47B
A47F

INCOMPLETE SEARCH

The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC so that only a partial search (R.62a, 63) has been carried out.

Claims searched completely :

Claims searched incompletely :

Claims not searched :

Reason for the limitation of the search:

see sheet C

2

Place of search	Date of completion of the search	Examiner
The Hague	13 December 2012	van Hoogstraten, S

CATEGORY OF CITED DOCUMENTS

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

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

& : member of the same patent family, corresponding document

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INCOMPLETE SEARCH
SHEET C

Application Number
EP 12 42 5092

Claim(s) completely searchable:
-

Claim(s) not searched:
1-4

Reason for the limitation of the search:

As there is no clear indication of the subject-matter which might be expected to form the basis of the claims to be filed later in the procedure, no meaningful search is deemed possible (Rule 63(2) EPC). The figures of the application show a metal wire shelf, mounting brackets therefore and vertical perforated uprights, wherein the brackets are hooked. The description of the application describes how to produce the metal wire shelf and how to assemble the rack, i.e. how to mount the shelf to the brackets. Claim 1 designates the realization of a wire shelf, characterised by a production process, i.e. a method. As stated by the representative in his letter of 23.11.2012, the application relates to a product, i.e. a plan in iron wire interlocking, and not to a method of producing said product. The claims encompass products, which are defined only by a desired property or effect (i.e. reducing cost expenditure and production time). Consequently, the claims are contrary to the requirement of clarity in Article 84 EPC, because the "result-to-be-achieved" type of definition does not allow the scope of the claim to be ascertained. There are no limiting technical features. This non-compliance with the substantive provisions is such that a meaningful search of the whole claimed subject-matter of the claims could/can not be carried out (Rule 63 EPC and Guidelines B-VIII, 3).

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 12 42 5092

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

13-12-2012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2389836 A1	30-11-2011	NONE	
EP 2389838 A1	30-11-2011	NONE	
US 6024333 A	15-02-2000	NONE	

EPO FORM P0459

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