



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
12.09.2018 Bulletin 2018/37

(51) Int Cl.:
E06B 3/46 (2006.01) **E05D 15/06 (2006.01)**
A47B 47/05 (2006.01)

(21) Application number: **18460008.8**

(22) Date of filing: **07.02.2018**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA ME
Designated Validation States:
MA MD TN

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(30) Priority: **07.02.2017 PL 12601617 U**

(54) **SOLID INSERTED SLIDING DOOR FRAME JOINED BY CARRYING AND GUIDING ELEMENTS**

(57) The solid inserted sliding door frame manufactured from grooved load-bearing profiles (1) made of solid materials joined with each other by means of metal carrying and guiding elements such as bottom carrying trolleys (3), top guides (2), as well as optional furniture hardware (4) which, join the profiles owing to a system of tongues inserted in the channels. The door frame of the structure described above is stiffened owing to the use of inserted profiles (5) which may also be an element fixing the sliding door filling material.

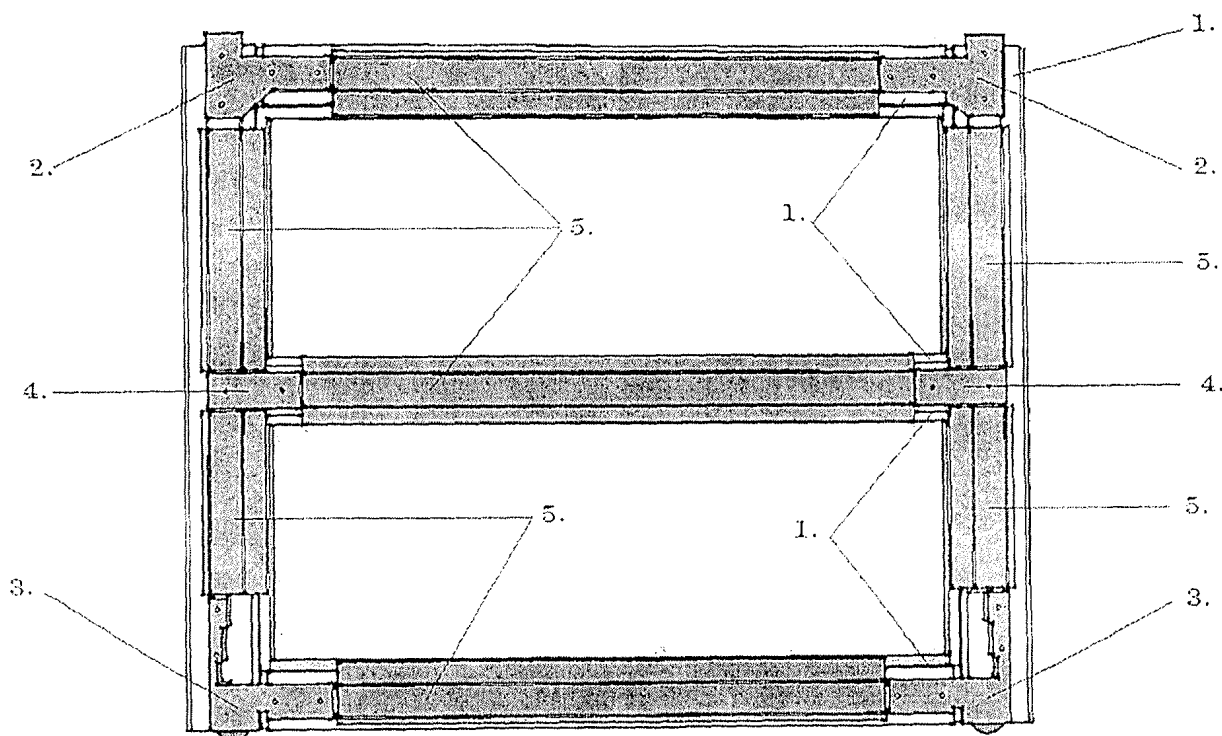


Figure 2

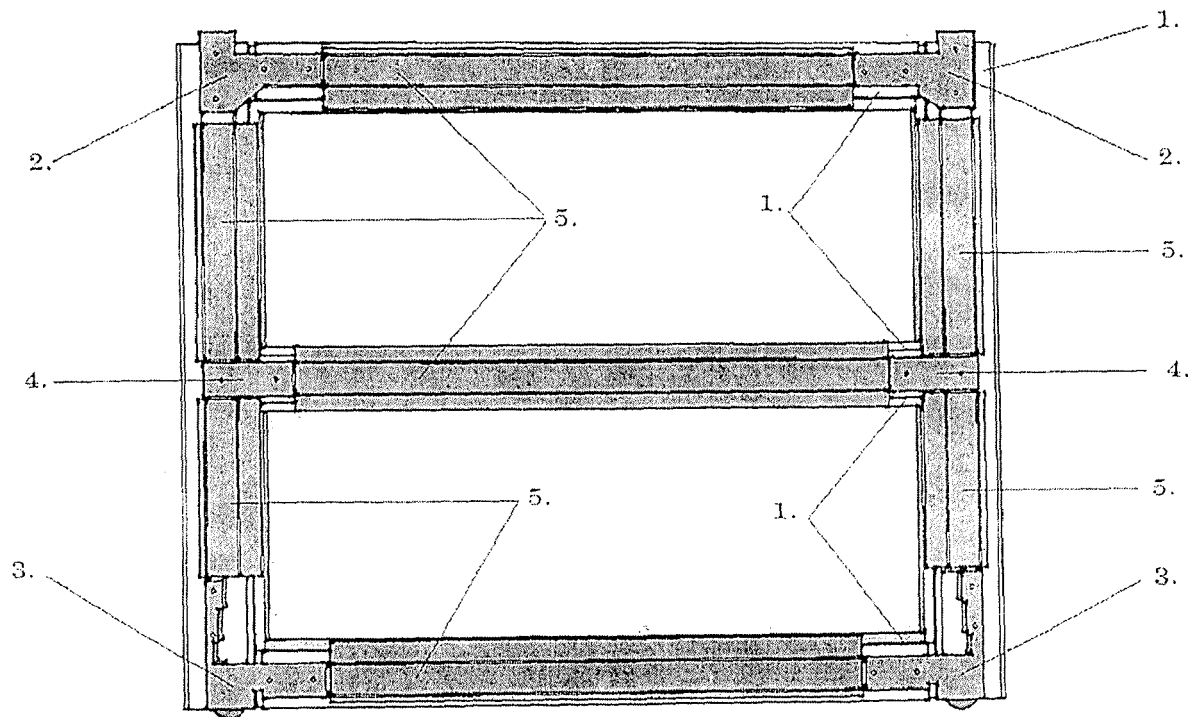


Figure 3

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Description

Technical field:

[0001] The subject matter of this invention is the solid inserted sliding door frame joined by carrying and guiding elements. The frame consists of an assembly of the following elements:

- grooved profiles made of a solid material;
- trolleys and guides, which have both the carrying and guiding function, as well as the structural function at the same time;
- optional structural hardware;
- profiles inserted into channels grooved in the door frame profiles.

[0002] This door frame is based on the assumption that the carrying and guiding elements (bottom trolleys and top guides) of that frame are also its structural elements. It is possible to connect those elements with the frame profiles owing to a system of channels grooved in the sliding door frame profiles and owing to the appropriately shaped arms of the casings of the carrying and guiding elements. Sliding door frame profiles are made of solid materials such as natural wood, engineered wood or wood base materials (engineered cellulosic products). Additionally, the sliding door frame may contain dividing profiles, which are fitted by means of structural hardware. The position of those carrying elements and hardware after installation in the frame is secured in the channels with wood screws, confirmat screws, nails etc.

Use:

[0003] Manufacture of solid frame sliding doors.

State of the art:

[0004] In furniture making industry, in the manufacture of sliding doors and furniture fronts, especially sliding cabinets and walk-in wardrobes, there occurs a kind of furniture front which is a sliding door based on a frame resembling a wooden frame made of planks. Those fronts are suitable for assembly with the various types of the door frame filling materials i.e. safety glass, a chipboard, cellular board, board on frame, laminated board etc. The wood plank imitation effect is achieved by various methods and with the use of various materials and joining techniques. There are door systems where horizontal or vertical sections are made of rolled steel wrapped in wood-imitating PVC film. Grooved MDF profiles wrapped in wood-resembling PVC films are another example. Each of those systems utilises suitable carrying solutions (trolleys and guides) and the elements and methods of joining the horizontal and vertical sections. None of the furniture sliding door construction systems known in technology allows for joining solid sliding door frame profiles

made of solid materials i.e. natural wood, engineered wood or wood base materials only by means of structural and carrying elements (bottom carrying trolleys) and structural guiding elements (top guides).

Problem:

[0005] The common wooden plank imitation made of PVC film glued onto a rolled steel section is cold to the touch and hollow. This gives the user an unpleasant feeling that the sliding door frame is not made of a material of natural origin. Additionally, systems of that kind are conspicuous for loud and unstable door leaf operation during opening and closing. The unstable door leaf operation is manifested by frame deflection and by undesirable sounds and vibrations during door leaf opening and closing. The advantage of those systems, however, is their quick and easy assembly (putting the door leaf together). They are also cheap to make.

[0006] Door leaves made of MDF sections wrapped in wood-resembling PVC film, in natural or modified veneers, are another example available at the market. That solution does not have the disadvantages of rolled steel leaves, but it is expensive because of a long and laborious assembly process. During leaf manufacture, the manufacturer is forced each time to perform activities such as, for example, the grooving of carrying roller pockets, the drilling of carpenter's plug holes, and the gluing of the door frame. This causes the need to allow for glue drying time in the manufacturing process, which results in that the assembly is time-consuming. Another problem connected with solutions of that kind is the vertical deformation (warping) of the door leaf under gravity forces and stresses in the door filling material (the bending of straight-line vertical frame elements). A deformed door makes the entire piece of furniture look considerably worse and, if deformation is more conspicuous, the piece loses its functionality due to door leaves colliding with each other when in use.

Solution:

[0007] Owing to the use of the set of the solutions described below in the solid inserted sliding door frame joined by the carrying and guiding elements, all the above problems occurring during the manufacture, assembly and use of the doors made of a solid wood-imitating profiles do not occur. Manufacture becomes quick and relatively inexpensive, as is the case with rolled steel frames or hollow steel profiles. Despite cheap assembly of those frames, there is an issue, however, with the furniture user's feeling when he or she touches the wooden plank imitation. Based on the proposed solution, the end user receives the product (a sliding door) with aesthetic values similar to sliding door frames made of the materials of natural origin, but without the risk of the warping of those frames. The set of structural elements of the solid inserted sliding door frame joined by carrying and guiding el-

ements, which allow the result described above, comprises:

- a) The load-bearing profiles of the sliding door frame (1) made of a solid material, with a system of longitudinal channels and pockets in the bottom ends of the vertical profiles. The load-bearing profiles may be made of natural wood, wood base materials or modified wood.
- b) Stiffening inserts (5) for installation in the longitudinal channels in the load-bearing profiles of the sliding door frame (1). The inserts have a stiffening function (they prevent the vertical warping of the sliding door frame) and, optionally, fix the sliding door filling material (glass or furniture board). After the inserts are placed in the longitudinal channels, the insert position is secured with glue on the inserts or, additionally, with screws, confirmat screws, nails etc.
- c) Bottom carrying trolleys (3) which, in addition to the carrying function, have the structural function for the sliding door frame due to the structure of their casing, which is installed in the longitudinal channels of the door frame load-bearing profiles and in pockets in the bottom part of the vertical elements of the sliding door load-bearing frame by means of extended arms provided with tongues. The positions of bottom trolleys in the profiles are secured against slipping out of the channels after assembly in the frame with screws, confirmat screws or nails etc.
- d) Top guides (2) which, in addition to the guiding function, have the structural function for the sliding door frame due to the structure of their casing, which is installed in the longitudinal channels of the sliding door by means of extended arms provided with tongues. The positions of top guides in the profiles are secured against slipping out of the channels after assembly in the frame with screws, confirmat screws or nails etc.
- e) Optional hardware for the sliding door frame dividing profiles (4) with a tongue system which, when inserted into the longitudinal channels, position and fix the sliding door frame dividing profile in position. The positions of hardware trolleys in the profiles are secured against slipping out of the channels after assembly in the frame with screws, confirmat screws or nails etc.

Essence of the invention:

[0008] Owing to the submitted invention with the use of the above-mentioned elements of the system, it is possible to quickly assemble sliding doors which do not have structural defects typical of systems based on rolled steel or MDF sections joined with classical carpenter's methods (pegs, screws etc.). The main advantage of the solution with the use of the solid inserted door system is that it is possible to make a door leaf based on a wide profile imitating a natural wood plank in a quick way

(which does not require gluing or positioning of the load-bearing elements) with a high level of aesthetic qualities, which is similar to that of furniture made of a natural material and appearing as such to the user when he or she touches the sliding door frame. An additional advantage of the solution with the use of the sliding door system based on a solid inserted frame structure joined by carrying and guiding elements is that the risk of sliding door leaf frame is avoided, which is achieved through the use of stiffening assembly inserts introduced into the longitudinal channels in load-bearing profiles.

Description of drawings:

[0009] The subject matter of the invention is presented in the attached drawing, which shows the following:

Figure 1: Rear view of the solid inserted sliding door frame joined by carrying and guiding elements.

Figure 2: Front view of the solid inserted sliding door frame joined by carrying and guiding elements.

Figure 3: Method of the installation of the inserted profile in the solid load-bearing profile.

Example of the invention implementation:

[0010] Solid inserted sliding door joined by carrying and guiding elements, composed of a frame with the following structure:

- solid load-bearing profiles made of pine ply wood veneered with modified oak, guided by a carrying and guiding system in the top steel track and in the bottom aluminium track, where the leaf frame is divided into two equal parts with a dividing strip, filled with 4 mm safety glass panes, black in the top frame part, and with a wood-resembling furniture board in the bottom part.

Claims

1. The inserted sliding door frame joined by carrying and guiding elements, which frame is composed of the load-bearing profiles (1), the bottom carrying trolley (3), the top guide (2) and inserted profiles (5). The frame is **characterised in that** the vertical and horizontal load-bearing profiles are made of solid sections with longitudinal channel grooves, however, vertical load-bearing profiles also have pockets in their bottom part. The load-bearing profiles are joined by means of tongues at extended metal arms of the bottom carrying trolley casings and of the top guides. The frame structure is stiffened owing to the introduction of the inserted profiles into the longitudinal channel grooves in the load-bearing profiles.

2. The inserted sliding door frame joined by carrying and guiding elements pursuant to claim 1 is **characterised in that** the frame structural element is also the hardware for the door leaf division profiles (4), which hardware also has tongues for fixing it in the longitudinal channel grooves of the load-bearing profiles (1). 5
3. The solid inserted sliding door frame joined by carrying and guiding elements pursuant to claim 1 or 2 is **characterised in that** the insert profiles are the fixing element for the door leaf filling material in the sliding door frame. 10
4. The solid inserted sliding door frame pursuant to claim 1 or 2 or 3 is **characterised in that** the load-bearing profiles (1) of the sliding door frame are made of natural wood. 15
5. The inserted sliding door frame pursuant to claim 1 or 2 or 3 is **characterised in that** the solid load-bearing profiles (1) of the sliding door frame are made of engineered woods. 20
6. The solid inserted sliding door frame pursuant to claim 1 or 2 or 3 is **characterised in that** the load-bearing profiles (1) of the sliding door frame are made of modified wood. 25

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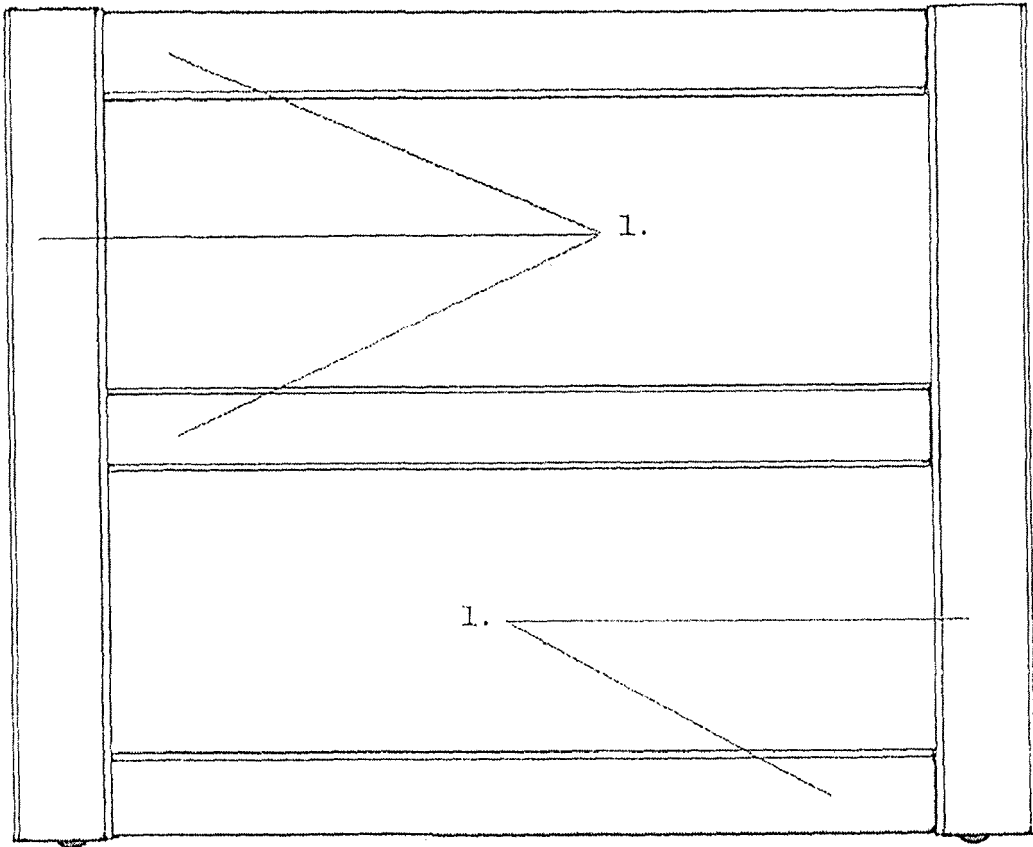


Figure 1

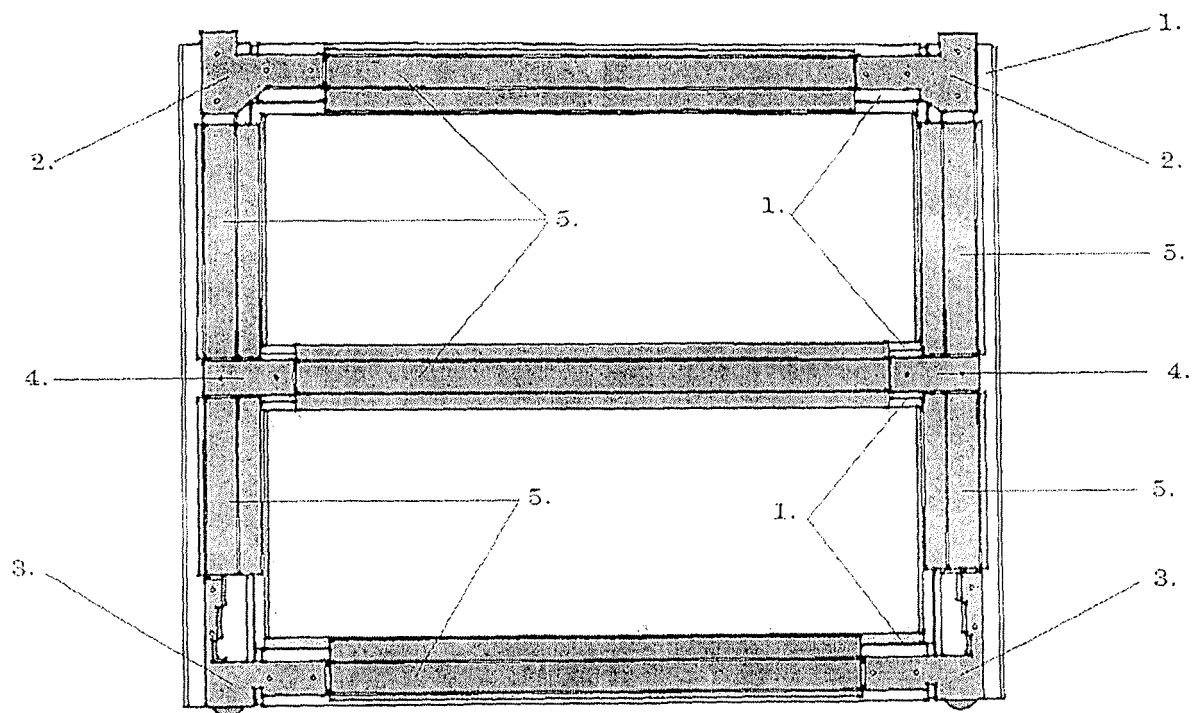


Figure 2

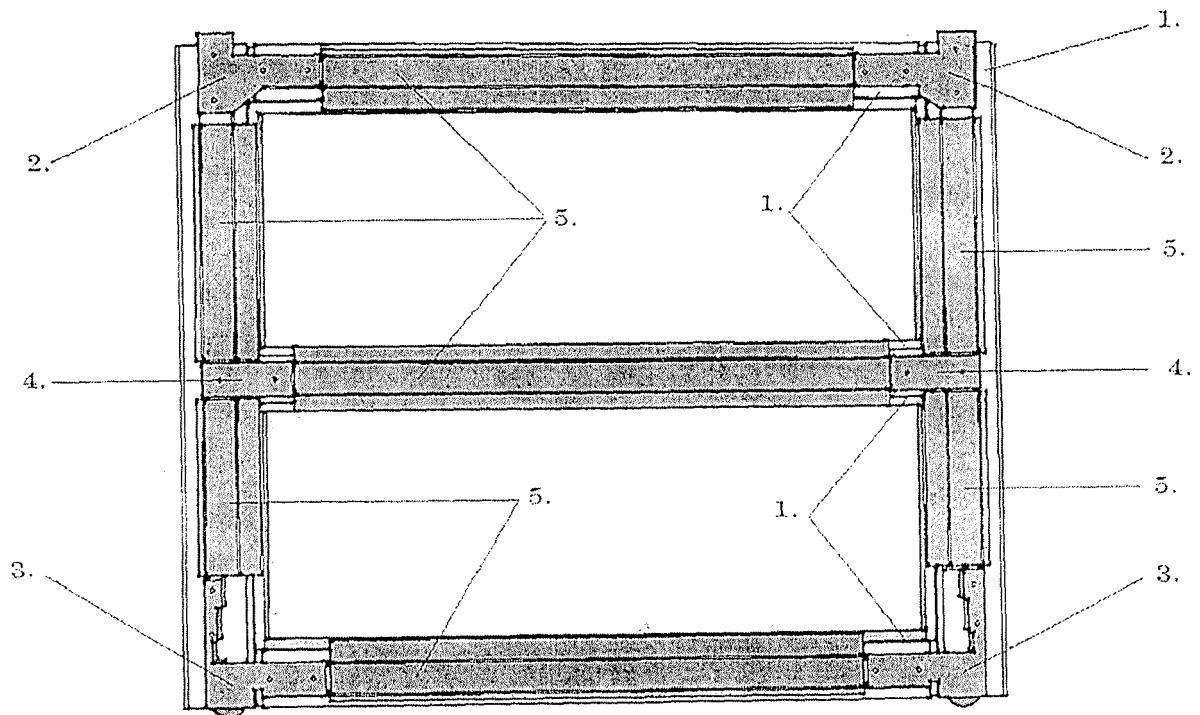


Figure 3

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EUROPEAN SEARCH REPORT

Application Number
EP 18 46 0008

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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X	EP 1 482 116 A1 (CABINET SCHRANKSYSTEME AG [DE]) 1 December 2004 (2004-12-01) * paragraph [0020]; figures 2, 5, 7 *	1-6	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			E06B E05D A47B
Place of search		Date of completion of the search	Examiner
The Hague		8 August 2018	Cobusneanu, D
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EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 18 46 0008

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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