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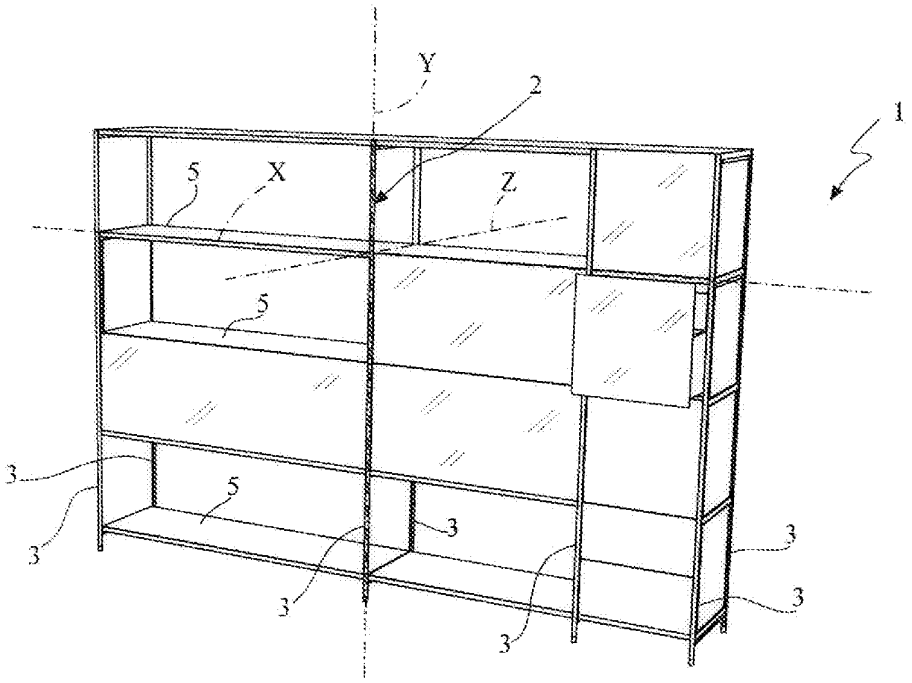
(54) **Furniture unit of the bookcase type with adjustable elements**

(57) A furniture unit of the bookcase type comprises at least one upright (3), at least one shelf (5), at least one shelf support bracket (6) extending from the upright and capable of supporting the shelf, and also first and second fixing means (15; 38) for fixing the shelf support bracket respectively on the upright and on the shelf. The shelf support bracket is slidably secured to the upright via first connection means (11, 12) provided on the shelf support bracket and on the upright, and is slidably secured to the shelf via second connection means (31, 32) provided on the shelf support bracket and on the shelf, so as to permit both the adjustable, continuous displacement of the shelf in a first sliding direction (Y) defined by the upright, and the adjustable, continuous displacement of the upright in a second sliding direction (X) defined by the shelf.

Fig. 1



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Description

Technical field

[0001] The present invention relates to a furniture unit of the bookcase type having the features mentioned in the preamble of the main claim.

Technological background

[0002] In the furniture sector, units of the bookcase type are known and widely used which comprise, in their most essential configuration, a plurality of horizontal shelves which are fixed, at different heights, onto a plurality of vertical uprights spaced apart from one another. The shelves commonly rest on suitable supports which are themselves fixedly or detachably anchored to the uprights.

[0003] In particular, it is known to provide on the uprights a plurality of anchorage seats for the supports, in such a way that the latter can be positioned at one of the various possible levels. The height of the shelf is therefore generally adjustable, but the choice is limited to a number of predetermined positions. Another system, described for example in US patent 2008/048081, enables the positioning of the shelves in height to be continuously adjusted by providing a rack-type mechanism for raising the shelves. This, however, involves a substantial complication of the structure, with the introduction of kinematic mechanisms which also necessarily influence the production costs. Other systems which permit the continuous adjustment of the height of the shelves provide on the upright a longitudinal channel in which there is slidably engaged a shelf support element that can be fixed to the upright by screw fixing means.

[0004] Even these systems, however, do not fully satisfy the more general requirement of providing this type of furniture unit with an ever more complete constructional flexibility, in such a way that permits the optimisation of all the spaces available.

[0005] It is pointed out that, in the present context, the expression "continuous adjustment" of the position of one element with respect to another element is to indicate the possibility of selecting any positioning point within a predetermined interval, therefore the choice is of a point within a continuum of points, which allows for an infinite number of possibilities. This type of adjustment of the position contrasts with that which permits the choice of the positioning point from among a limited and predetermined number of possible points, that is to say, a point within a discrete series of points, which allows for a finite number of possibilities.

Description of the invention

[0006] The problem underlying the present invention is that of producing a furniture unit of the bookcase type, with adjustable elements, which is structurally and functionally designed to fulfil the aforesaid requirement, remedying the limitations mentioned above with reference to the prior art.

[0007] Within the framework of this problem it is an aim of the invention to provide a furniture unit of the bookcase type which permits continuous adjustment also of the horizontal positioning of the uprights with respect to the shelves. Another aim of the invention is to respond to these requirements by means of a solution which does not comprise particular difficulties of construction, nor of assembly, and which at the same time is of limited cost.

[0008] A further aim of the invention is that of making it possible to modify the positioning of the uprights and/or shelves rapidly according to the needs and wishes of the user.

[0009] This problem is solved and these aims are achieved by the present invention by means of a furniture unit of the bookcase type produced in accordance with the following claims.

Brief description of the drawings

[0010] The features and advantages of the invention will become clearer from the detailed description of a preferred exemplary embodiment thereof, illustrated by way of non-limiting example with reference to the appended drawings, in which:

- Figure 1 is a perspective front view of a furniture unit of the bookcase type produced according to the present invention,
- Figure 2 is a schematic view of a first step of assembly of some elements of the furniture unit of Figure 1,
- Figure 3 is a view on an enlarged scale of a detail of Figure 2,
- Figure 4 is a schematic view of a second step of assembly of the furniture unit of Figure 1,
- Figure 5 is a schematic view of a third step of assembly of the furniture unit of Figure 1,
- Figure 6 is a view on an enlarged scale of a detail of Figure 5,
- Figure 7 is a schematic view of a fourth step of assembly of the furniture unit of Figure 1,
- Figure 8 is a schematic view of a fifth step of assembly of the furniture unit of Figure 1,
- Figure 9 is a schematic view of a sixth step of assembly of the furniture unit of Figure 1,
- Figure 10 is a schematic rear view of a first accessory of the furniture unit of Figure 1,
- Figure 11 is a schematic sectional view on an enlarged scale of a detail of the accessory of Figure 10 along the line XI-XI,
- Figure 12 is a schematic view of a detail of the attachment of the accessory of Figure 10,
- Figures 10a and 11a are schematic views, respectively in perspective and in section, of an alternative embodiment of the first accessory illustrated in Figures 10 and 11,

- Figures 13 and 14 are schematic views of respective steps of assembly of a second accessory of the furniture unit of Figure 1,
- Figures 15 and 16 are respectively schematic perspective and lateral views of a step of assembly of a third accessory of the furniture unit of Figure 1,
- Figure 17 is a sectional view along the line XVII-XVII of Figure 16,
- Figures 18a and 18b are schematic perspective views of a detail on an enlarged scale of a component of Figure 15, respectively in the connected and the disconnected state,
- Figures 19a and 19b are schematic views similar to Figures 18a, 18b of a first alternative embodiment of the unit of those Figures,
- Figures 20a and 20b are schematic views similar to Figures 18a, 18b of a second alternative embodiment of the unit of those Figures,
- Figures 21a and 21b are schematic views similar to Figures 18a, 18b of a third alternative embodiment of the unit of those Figures,
- Figures 22a and 22b are schematic views similar to Figures 18a, 18b of a fourth alternative embodiment of the unit of those Figures,
- Figures 23a and 23b are schematic views similar to Figures 18a, 18b of a fifth alternative embodiment of the unit of those Figures,
- Figure 24 is a schematic view similar to Figure 18a of a sixth alternative embodiment of the component of that Figure.

Preferred embodiment of the invention

[0011] In the drawings, the reference 1 indicates as a whole a furniture unit of the bookcase type, produced according to the present invention.

[0012] Preferably, the furniture unit 1 is suitable for indoor furniture, in particular for domestic furniture; however, it is potentially usable also in outdoor situations or in furniture for commercial purposes.

[0013] The furniture unit 1 comprises a framework 2 including a plurality of uprights 3, of predominantly longitudinal extent Y, rising from a support plane in a substantially vertical direction.

[0014] Preferably, the uprights 3 are disposed in two substantially parallel rows to define, respectively, a back plane and a front plane of the framework 2. More preferably, the uprights 3 are disposed in such a way as to face each other two by two in a transverse direction Z, substantially perpendicular to the back plane and the front plane defined thereby.

[0015] Between the pairs of uprights facing each other there is additionally arranged, at different heights, a plurality of shelves all indicated by 5 and extending in a longitudinal direction X substantially perpendicular to the transverse direction Z. The shelves 5, in the preferred version described here, are all lying in one plane, defined by the directions X and Z, and substantially horizontal. Although what has been described above is the preferred framework configuration, widely used and also of simpler and more reliable construction, it will be clear to a person skilled in the art that it lends itself to innumerable variants to which can be applied, without excessive effort on the part of a person skilled in the art, the constructional solutions which are the subject of the present invention, as described and claimed hereinafter.

[0016] Each shelf 5 is supported by a plurality of shelf support brackets 6 extending from the uprights 3.

[0017] Preferably, in order to ensure more solid support for the shelves 5 and to connect the uprights 3 of each pair firmly, provision is made for the shelf support brackets 6 to be fixed to the opposite longitudinal ends of a tubular rod 7, extending between the uprights 3 in the transverse direction Z. According to a first aspect of the present invention, each shelf support bracket 6 is slidably secured both to the respective upright 3 and to the shelf 5 supported thereon, respectively via first and second connection means.

[0018] The first connection means are arranged on the shelf support bracket 6 and on the upright 3, and comprise a first groove 11 provided on the upright 3, as well as a first runner 12 associated with the shelf support bracket 6 and capable of being slidably engaged within the first groove 11, without being able to disengage therefrom.

[0019] The first groove 11 preferably has a T-shaped cross-section, with a back portion 13 of enlarged cross-section and with an inlet portion 14 of restricted cross-section, open towards the outside of the upright.

[0020] The first runner 12, formed in this preferred example by a four-sided plate, is received in the back portion 13 and has a cross-section intermediate between the cross-section of the back portion 13 and the cross-section of the inlet portion 14.

[0021] First fixing means 15 are additionally provided for fixing the shelf support bracket 6 to the upright 3 in any desired position along the first groove 11.

[0022] The first fixing means 15 comprise a screw 17, extending through a hole 18 provided on a support portion 19 of the shelf support bracket 6, and engaged by screwing in a threaded hole 20 passing through the first runner 12. The support portion 19 has an abutment surface 21 for the upright 3 and is preferably configured to mate with the outer profile thereof.

[0023] The screw 17 therefore extends through the hole 18, through the inlet portion 14 of the first groove 11 and is engaged by screwing in the hole 20, so that by screwing the screw 17 on the first runner 12, the shelf support bracket 6, abutted in the region of the support portion 19 by a head 22 of the screw 17, is clamped against the upright 3 at the inlet portion 14 of the first groove 11. The second connection means are arranged on the shelf support bracket 6 and on the shelf 5, and comprise a second groove 31, provided on the shelf 5, and a second runner 32 associated with the shelf support bracket 6 and capable of being slidably engaged within

the second groove 31, without being able to disengage therefrom.

[0024] The second groove 31 is preferably provided along the entire longitudinal extent X of the shelf 5, thus defining a second sliding direction, substantially coinciding with the direction X, of the shelf support bracket 6 with respect to the shelf 5. Preferably, each shelf 5 comprises two second grooves 31, provided on a lower surface of the shelf 5, respectively in the region of the two opposed longitudinal edges facing the uprights 3.

[0025] The second groove 31 preferably has a T-shaped cross-section, substantially similar to that of the first groove 11, with a back portion 33 of enlarged cross-section and with an inlet portion 34 of restricted cross-section, open towards the outside of the shelf 5.

[0026] The second runner 32 comprises a body 35, elongate along the axis X and held in engagement in the second groove 31, and a pair of wings 36 extending from the body 35 in the direction Z, therefore transversely to the axis X, and slidably engaged in the back portion 33 of the second groove 31.

[0027] In the region of the pair of wings 36, the second runner 32 has a cross-section intermediate between the cross-section of the back portion 33 and the cross-section of the inlet portion 34.

[0028] Second fixing means are additionally provided for fixing the shelf support bracket 6 to the shelf 5 in any desired position along the second groove 31.

[0029] The second fixing means comprise a threaded pin 38, which is headless and is engaged by screwing in a corresponding threaded hole 39, passing through the second runner 32, and is capable of abutting against a back wall 40 of the second groove 31.

[0030] The hole 39 extends in a transverse direction with respect to the longitudinal direction X, preferably in a direction substantially perpendicular both to the direction X and to the direction Z in which the wings 36 extend, and is provided on the body 35 in a position remote from the wings 36.

[0031] In the preferred embodiment described here, each shelf support bracket 6 comprises a first and a second element, indicated respectively by 41 and 42, which are separate and distinct from each other and able to be connected to each other.

[0032] The first element 41, with which the first runner 12 is associated, comprises a body 43 fixed to the end of the rod 7 and elongate in prolongation thereof along the transverse axis Z, on which a recess 44 is provided, having a trapezoidal profile extending in the longitudinal direction X.

[0033] On the opposite side from the rod 7, there rises from the body 43 the support portion 19 which preferably extends for a measure substantially equal to the thickness of the shelf 5 so that, when the latter is resting on the shelf support bracket 6, the entire support portion 19, and also the head 22 of the screw 17, are substantially hidden from view.

[0034] The second element 42 comprises the second runner 32, described previously, and a foot 45, advantageously extending from the body 35 of the second runner 32 on the opposite side with respect to the threaded hole 39.

[0035] In particular, the foot 45 is configured similarly to the recess 44 and is capable of being detachably engaged therein by means of insertion of the foot 45 in the recess 44 in a direction of connection of the first element 41 in the second element 42, which, in this case, coincides with the longitudinal direction X. The preferred configuration of the recess 44 and of the foot 45 described above and illustrated in the appended drawings, constitutes a detachable connection of the dovetail type, but other configurations may be used which permit a connection having the same characteristics.

[0036] The furniture unit 1 may advantageously comprise some accessories useful for the structural and functional completion of the framework 2.

[0037] A first of the accessories is formed by a door 50, shown in detail in Figures 10 to 12, which is useful as a closure for the front of one of the spaces defined by the series of uprights 3 and shelves 5.

[0038] The door 50 comprises a frame 51 and a cover 51a, for example made of glass, fixed onto the frame 51. The latter is preferably formed by four profile members 52 of similar cross-section, which can be cut to size according to the dimensions of the space to be enclosed, and joined to one another by means of respective squares, not shown in the drawings, inserted into channels 53 suitably provided on the profile members 52.

[0039] Each profile member 52 additionally comprises a grooved appendage 54 extending away from the channels 53 and in which can be slidably engaged first connection elements 55 of a hinge (not shown) used for mounting the door 50 on a shelf 5.

[0040] In particular, provision is made for the hinge to be mounted between one of the aforesaid first connection elements 55 and a second connection element 56 fixed directly to the shelf 5 or to a dividing panel 57 inserted to delimit vertically the space closed off by the door 50.

[0041] Figures 10a and 11a show a second embodiment of a door, indicated as a whole by 90.

[0042] In comparison with the door 50, the door 90 comprises a panel 91, to the lower internal edge 91a of which is fixed a single linear profile member 92, substantially similar to one of the profile members 52 of the alternative door described above. In this example also, the profile member 92 comprises a grooved appendage 93, in which can be slidably engaged the first connection elements 55 of the hinge (not shown) which will be used for mounting the door 90 on a shelf 5 or to a dividing panel 57.

[0043] At the ends of the profile member 92, respective appendages 94 are provided, suitably fixed by means of screws 95 in the internal cavity 96 of the profile member 92, for the mounting of small pistons, for example gas type pistons (not shown), which may serve as brakes or, conversely, as thrusters for the opening pivoting of the

door 90.

[0044] The door 90, in comparison with the door 50, is advantageously able to be produced in a more rapid and simple manner.

[0045] A second accessory of the furniture unit 1 is formed by a back, useful as a closure for the rear side of one of the spaces defined by the series of uprights 3 and shelves 5.

[0046] The back is formed by a panel 61, which may advantageously be mounted in a position spaced from the shelf 5, or, alternatively, supported on the latter.

[0047] In the first case, shown in detail in Figures 13 and 14, the panel 61 is supported by a pair of first adaptors 62, mounted on respective uprights 3 which are adjacent to each other. Each first adaptor 62 is coupled to the respective upright 3 on the opposite side from the shelf 5 by means of a pair of wings 63 which surround the external profile of the upright 3 and are clamped on to it in the desired position by means of screws 64.

[0048] Each first adaptor 62 additionally comprises at least one lateral grooved profile member 65 extending laterally and in a position spaced apart from the upright 3, and capable of receiving in engagement a lateral edge of the panel 61. In a first embodiment, the first adaptor 62 provides a pair of lateral grooved profile members 65, extending from the opposite side in the direction X, while in a second embodiment, the first adaptor 62 comprises only one lateral grooved profile member 65. Both forms of embodiment are shown in Figure 14.

[0049] The opposite longitudinal ends of the first adaptor 62 are closed by a pair of plugs 66 which, by means of the provision of a lip 67, also provide for the retention of the panel 61 in the vertical direction.

[0050] In this first alternative of assembly, between the panel 61 and the shelf 5 a space is defined which may conveniently be used for the passage of cables between superposed spaces.

[0051] In the second alternative of assembly of the back, the panel 61 is supported by a pair of second adaptors 70, mounted on respective uprights 3 adjacent to one another.

[0052] The second adaptor 70 is connected to the respective upright 3 on the same side as the shelf 5 by means of a first grooved profile member 71, which is received in engagement within the first groove 11 of the upright 3 and is fixed in the desired position by means of a screw 72.

[0053] Each second adaptor 70 is supported on an underlying shelf 5 and comprises a lateral grooved profile member 73a, capable of receiving in engagement a lateral edge of the panel 61.

[0054] The second adaptor 70 may additionally comprise a further grooved lateral profile member 73b, extending on the opposite side from the grooved lateral profile member 73a, and capable of receiving in engagement a lateral edge of a panel similar to and adjacent to the panel 61.

[0055] Centrally with respect to the two grooved lateral profile members 73a, 73b, and substantially in opposition to the first grooved profile member 71, there is preferably additionally provided a central grooved profile member 74, capable of receiving in engagement a lateral edge 75a of a panel 75, extending between a pair of uprights 3 in the transverse direction Z, to form a side of a space defined by the framework 2.

[0056] Preferably, on the lower side of the tubular rod 7 a groove 76 is provided, capable of engaging an upper edge 75b of the panel 75, while the opposite lower edge remains supported on the underlying shelf 5.

[0057] Each second adaptor 70 comprises a first portion 80 and a pair of second portions 81, each detachably connectable to the first portion 80, by means of the engagement, preferably by a snap-fit, of one or more wings 82, provided on each of the second portions 81, within a corresponding longitudinal groove 83 provided on the first portion 80. The wings 82 are formed by a strip of resilient material, for example harmonic steel, folded back on itself so as to form an enlarged head, resiliently compressible.

[0058] The first portion 80 is intended to be connected to the upright 3 and therefore comprises the grooved profile member 71 and the central grooved profile member 74. The longitudinal grooves 83 are preferably placed at the sides of the central grooved profile member 74.

[0059] The first portion 80 additionally comprises only one of the two walls forming the grooved lateral profile members 73a, 73b, in particular the one closest to the grooved profile member 71.

[0060] Each of the second portions 81 comprises a pair of walls disposed substantially in an L-shape, and which, when the second portion is engaged in connection with the first portion 80, respectively form the second wall of the grooved lateral profile members 73a, 73b and the continuation of one of the walls of the central grooved profile member 74.

[0061] Figures 19a-b, 20a-b, 21a-b, 22a-b, 23a-b and 24 show respective alternative embodiments 70a-70f of the second adaptor 70.

[0062] The first variant (Figures 19a, 19b) differs from the second adaptor 70 in that it does not provide for the central grooved profile member 74, but only the lateral grooved profile members 73a, 73b. In this case, the first portion 80 is the same as that of the previous example, while the sole second portion 81, substantially strip-like, closes the central grooved profile member 74 and defines the two second walls of the grooved lateral profile members 73a, 73b. The second and the third variant (Figures 20a, 20b and 21a, 21b) differ from the second adaptor 70 in that it provides for only one of the two lateral grooved profile members 73a, 73b, while maintaining the central grooved profile member 74, such that it is sufficient to use in connection with the first portion 80 only one or the other of the second portions 81 of the variant of Figures 18a, 18b.

[0063] The fourth and the fifth variant (Figures 22a, 22b and 23a, 23b) differ respectively from the second

and the third variant in providing for only one lateral grooved profile member 73a or 73b, without the central grooved profile member 74. In this case, connected to the first portion 80, which remains the same as that of the second and third variants, there is a second strip-like portion 81, which closes the central grooved profile member 74 present on the first portion 80.

[0064] The sixth variant (Figure 24) differs from the preceding variants in providing for only the central grooved profile member 74, without any lateral grooved profile member. In this case the second adaptor 70f comprises only one portion and not two portions that can be connected to each other. Naturally, in this case there is no provision for the mounting of any back 61 but only of a side 75.

[0065] Each variant of the second adaptor will be selected in the stage of assembly of the furniture unit 1 according to the requirement to form backs and/or sides in the region of a specific upright 3.

[0066] The assembly of the furniture unit 1 is as follows.

[0067] A pair of uprights 3 are joined by one or more rods 7, to the opposite longitudinal ends of which are fixed the first elements 41 of respective shelf support brackets 6.

[0068] The screws 17 are inserted into the holes 18 in the respective supporting portions 19 and are engaged by being loosely screwed into the threaded holes 20 of respective first runners 12. The latter are inserted into the first grooves 11 from a longitudinal end of the uprights 3 (Figure 2), which are then closed by end plugs 47.

[0069] The first runners 12 are able to slide in the direction Y defined by the first groove 11 and can be positioned at the desired height. At this point, by tightening the screws 17, the first elements 41 are fixed to the uprights 3. In this way, on each pair of uprights there are fixed, at different heights, a plurality of rods 7 corresponding to the number of shelves 5 which will form the furniture unit 1.

[0070] This procedure is repeated for each pair of uprights 3 and the pairs of uprights thus obtained are positioned in alignment in the direction X.

[0071] Each shelf 5 is connected, at each of its second grooves 31, to a number of respective second elements 42 equal to the number of uprights 3 to which it will be secured.

[0072] The second runners 32 are inserted into the second grooves 31 via the longitudinally opposed edges of the shelf 5, which are then closed by corresponding end plugs.

[0073] Each second element 42 is slid along the second groove 31 until the foot 45 engages the recess 44 of a corresponding first element 41, thus forming the shelf support bracket 6.

[0074] The threaded pin 38 is then screwed into the hole 39 provided in the second runner 32, until it meets the back wall 40 of the second groove 31, locking the second element 42 in position with respect to the shelf 5.

[0075] At the same time, as a result of the screwing action, the body 35 of the second runner 32 is partially rotated about the pivot axis formed by the wings 36 in such a way as to raise the foot 45 and urge it against the recess 44, locking the first element 41 on the second element 42. In order to facilitate this pivoting movement, the body 35 has a cross-section smaller than the cross-section of the inlet portion 34 of the second groove 31.

[0076] In this way, with a single screwing operation the double effect of locking the first element 41 on the second element 42 and of locking the shelf support bracket 6 on the shelf 5 is obtained.

[0077] It will be noted that the furniture unit 1 permits the adjustment of the height positioning of the shelves 5 in any position (and not only in predetermined positions) in a first sliding direction defined by the first groove 11.

[0078] At the same time, the furniture unit 1 permits the adjustment of the horizontal positioning of the uprights 3 in any position (and not only in predetermined positions) in a second sliding direction defined by the second groove 31.

[0079] This advantageously makes it possible to adjust as desired the positioning both of the shelves and of the uprights, thus obtaining a structure of extremely flexible configuration.

[0080] Once the position of the shelves and uprights has been defined, the furniture unit 1 may be equipped with suitable bracing means extending between the uprights 3 or, alternatively, one or more uprights 3 may be anchored to a wall or ceiling.

[0081] All the spaces defined in the furniture unit 1 may be delimited, if desired, by panels 61 or 75 extending between adjacent uprights 3 in order to close off the space at the rear or the side. In this case the first adaptors 60 or the second adaptors 70-70f, adapted to the fixing of the panels, will be fitted to the uprights 3 in such a way as to obtain the structure previously described. With regard to the use of the second adaptors 70-70e, which provide for the connection of at least two portions 80, 81 to one another, it should be pointed out that assembly takes place in the following manner.

[0082] Firstly, the first portion 80 is fixed to the upright 3 via the engagement of the grooved profile member 71 and subsequent fixing with screws, after which there is inserted at the front, across the space, a panel 61, which is supported at the first walls of the lateral grooved profile members 73a, 73b. Finally, there is fixed to the first portion 80, by means of snap-fitting of the wings 82 in the longitudinal groove 83, the second portion 81 which completes the second adaptor 70-70e, closing the lateral grooved profile members 73a, 73b and thus holding the panel 61 in position.

[0083] In addition, the spaces may be closed at the front by a set of drawers or by a door 90 or a door 50. The latter, in particular, is made to measure from a frame 51 obtained by cutting to a suitable size four profile members 52 and joining them to one another by fixing with square plates. Prior to fixing with the square plates there are inserted into the grooved appendage 54, correspond-

ing to the profile member 52 intended to be hinged to the shelf 5, the first connection elements 55 corresponding to the number of hinges necessary for the correct mounting of the door. In the preferred case illustrated in Figure 10, the first connection elements 55 are two in number and the profile 52 in which they are slidably received is the lower one.

[0084] The first connection elements 55 are then fixed in the desired position, corresponding to that of the second connection elements 56, and the cover 51a is finally fixed to the frame 51.

[0085] Once the hinge has been mounted between the first and second connection elements 55 and 56, the door 50 can be mounted on the shelf 5 or on the dividing panel 57. The mounting of the door 90, however, entails cutting to size the profile member 92, optionally fixing within it the appendages 94, and fixing it to the panel 91. The mounting of the first connection elements 55 is similar to that of the door 50.

[0086] The present invention solves the problem mentioned above with reference to the prior art cited, at the same time providing numerous other advantages, including the fact that the elements of the furniture unit are easy to construct and quick to assemble.

[0087] In particular, this system makes it possible to be liberated from the standard measurements imposed by a purely modular construction of furniture units, making it possible to obtain an indefinite number of possible configurations and to change easily from one configuration to another.

[0088] In addition, the screws and part of the fixing components are hidden from view, so as not to compromise the external appearance of the furniture unit. In addition, it will be noted that the backs, when mounted with the second adaptors used with the second adaptors formed of a plurality of portions connectable to one another, may advantageously be disassembled and reassembled extremely easily.

Claims

1. Furniture unit of the bookcase type, comprising at least one upright (3), at least one shelf (5), at least one shelf support bracket (6) extending from said upright and capable of supporting said shelf, as well as first and second fixing means (15; 38) for fixing said shelf support bracket respectively on said upright and on said shelf, wherein:

   - said shelf support bracket is slidably secured to said upright via first connection means (11, 12) provided on said shelf support bracket and on said upright, so as to permit the adjustable, continuous displacement of said shelf in a first sliding direction (Y) defined by said upright,
   - said first connection means comprising a first groove (11) extending longitudinally on said upright, to define said first sliding direction, and a first runner (12), associated with said shelf support bracket, which is slidably engaged in said first groove,
   - said shelf support bracket is slidably secured to said shelf via second connection means (31, 32) provided on said shelf support bracket and on said shelf, so as to permit the adjustable, continuous displacement of said upright in a second sliding direction (X) defined by said shelf, and **characterized in that** said second connection means comprise a second groove (31) extending longitudinally along said shelf, to define said second sliding direction, and a second runner (32), associated with said shelf support bracket, which is slidably engaged in said second groove.

2. Furniture unit according to claim 1, wherein said first groove and said first runner are so configured as to allow the first runner to slide within the first groove without being able to disengage therefrom.

3. Furniture unit according to claim 2, wherein said first groove has a T-shaped cross-section, with a back portion (13) of enlarged cross-section and with an inlet portion (14) of restricted cross-section, open towards the outside of the upright, and wherein said first runner is at least partially received in said back portion and has a cross-section intermediate between said enlarged cross-section and said restricted cross-section.

4. Furniture unit according to claim 3, wherein said first fixing means comprise a threaded hole (20) provided in said first runner and a screw (17) arranged on said shelf support bracket, said screw extending through said inlet portion of said first groove and being engaged by screwing in said hole, in order to bring said first runner close to said shelf support bracket and clamp said shelf support bracket against said upright.

5. Furniture unit according to any one of claims 2 to 4, wherein said shelf support bracket (6) comprises a first element (41) with which said first runner is associated and a second element (42), separate from said first element, with which said second runner is associated, said first and said second element being detachably connectable to each other in order to form said shelf support bracket.

6. Furniture unit according to claim 5, wherein said first and said second element are configured so as to permit their detachable mutual connection by the insertion of one of said first and said second element in the other of said first and said second element, in a predefined direction of connection (X).

7. Furniture unit according to claim 6, wherein said first and said second element are configured so as to define a form-fit connection of the dovetail type.

8. Furniture unit according to any one of the preceding claims, wherein said second groove and said second runner are so configured as to allow the second runner to slide within the second groove without being able to disengage therefrom.

9. Furniture unit according to claim 8, wherein said second groove has a T-shaped cross-section, with a back portion (33) of enlarged cross-section and with an inlet portion (34) of restricted cross-section, open towards the outside of the shelf, and wherein said second runner is at least partially received in said back portion and has a cross-section intermediate between said enlarged cross-section and said restricted cross-section.

10. Furniture unit according to claim 8 or 9, wherein said second fixing means comprise a threaded hole (39) provided in said second runner and a threaded pin (38) engaged by screwing in said hole in order to abut against a back wall (40) of said second groove and clamp said shelf support bracket against said shelf.

11. Furniture unit according to claim 10, wherein said second runner comprises a body (35) engaged in said second groove and a pair of wings (36) extending from said body and engageable in said back portion (33) of the second groove, said threaded hole (39) being provided on said body in a position remote from said pair of wings and extending in a transverse direction (Y) with respect to said direction of connection.

12. Furniture unit according to claim 11, wherein said second element (42) comprises said second runner and a foot (45) capable of connection with said first element (41), said foot extending from the body of said second runner on the opposite side from said threaded hole, such that by the action of abutment of said threaded pin against the back wall (40) of said second groove, said foot is pivoted about a pivot axis defined by said pair of wings (36) in a direction transverse to said direction of connection, so as to urge said foot against said first element and clamp said first element on said second element.

13. Furniture unit according to any one of the preceding claims, wherein the uprights are disposed in transverse pairs (Z) with respect to said second sliding direction (X) defined by said shelf.

14. Furniture unit according to any one of the preceding claims, wherein for each upright of a pair of said uprights a respective shelf support bracket is provided and said shelf support brackets are mounted at the opposite longitudinal ends of a tubular rod (7).

Fig. 1

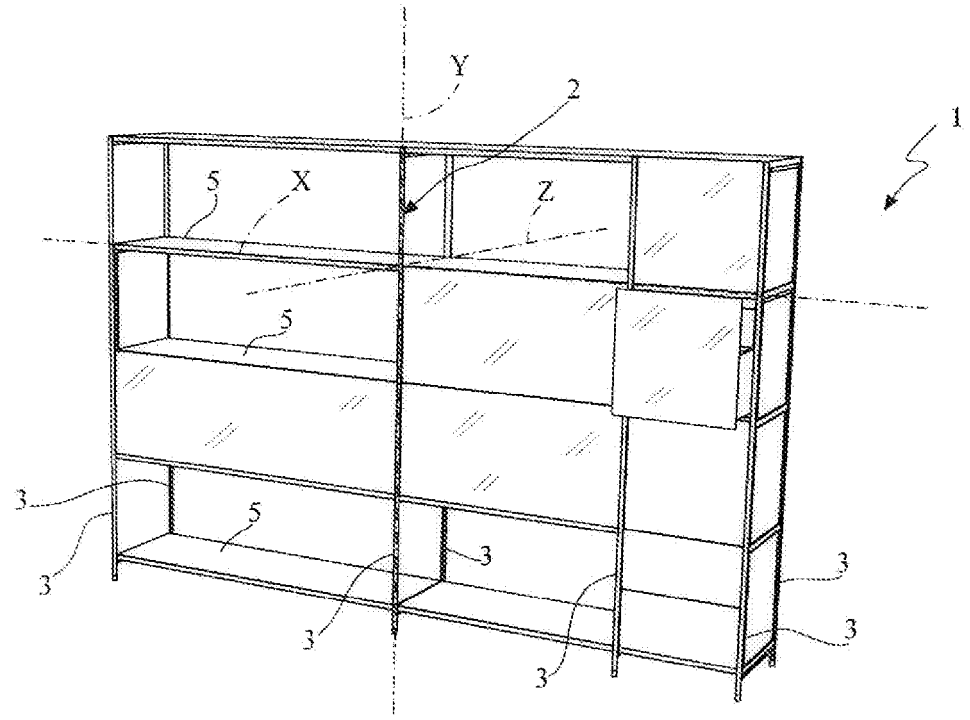


Fig. 2

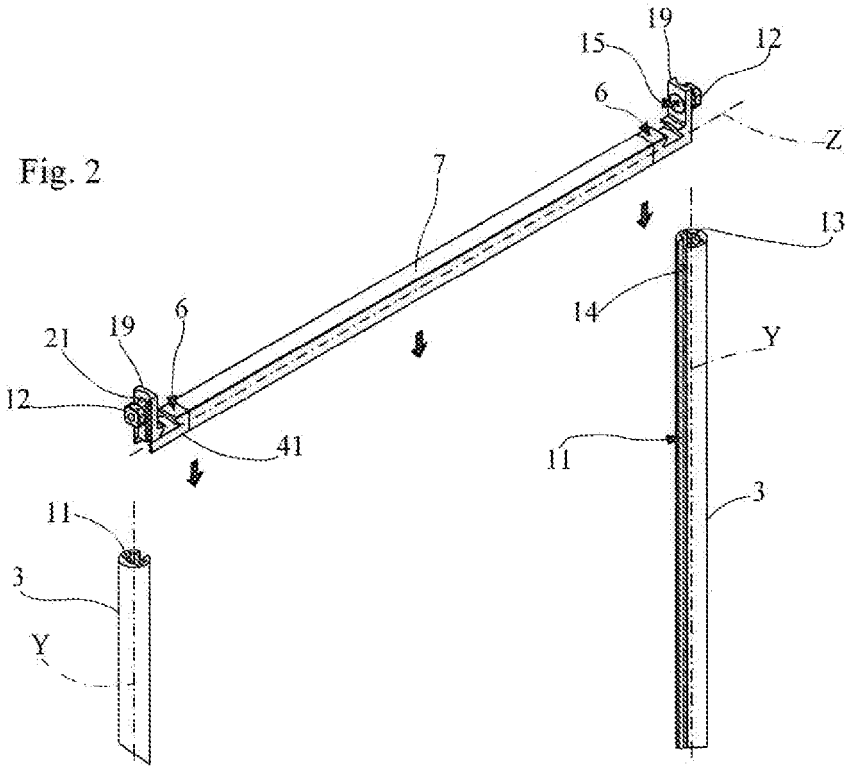
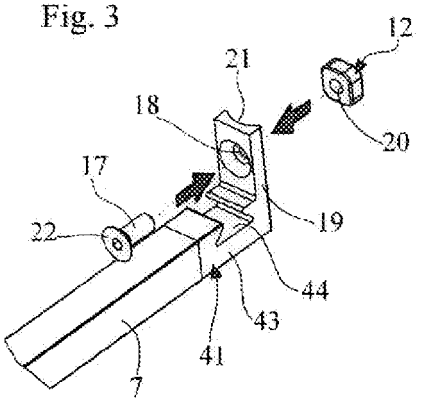


Fig. 3



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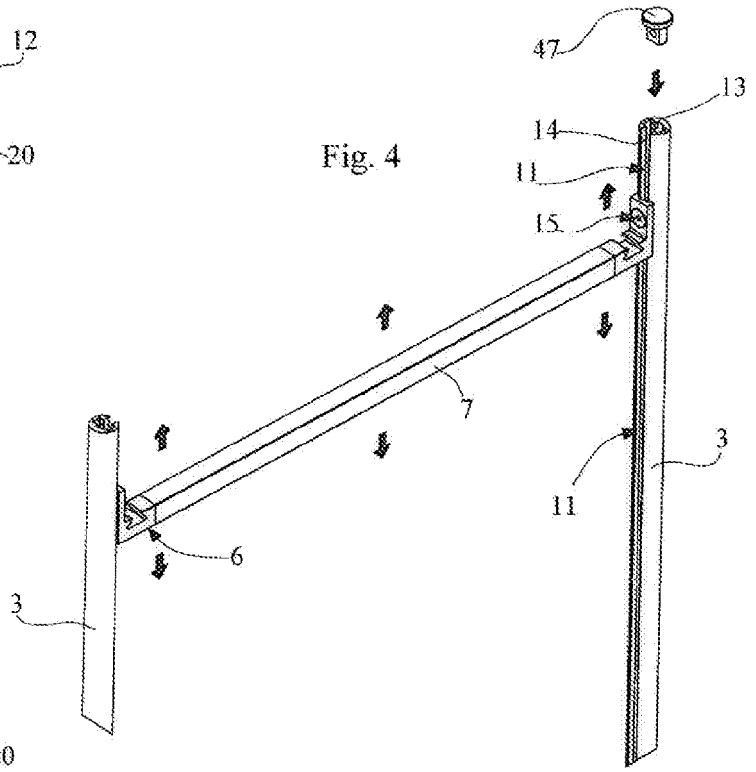


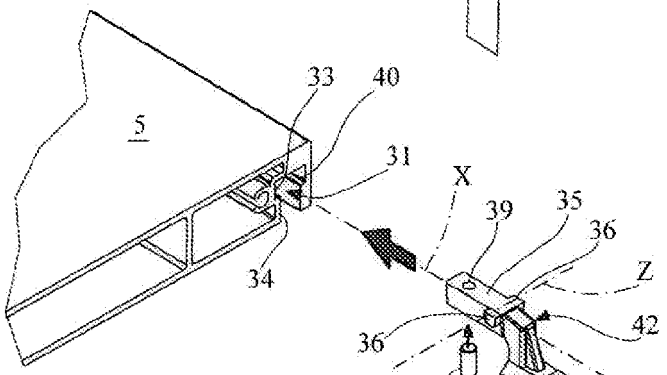
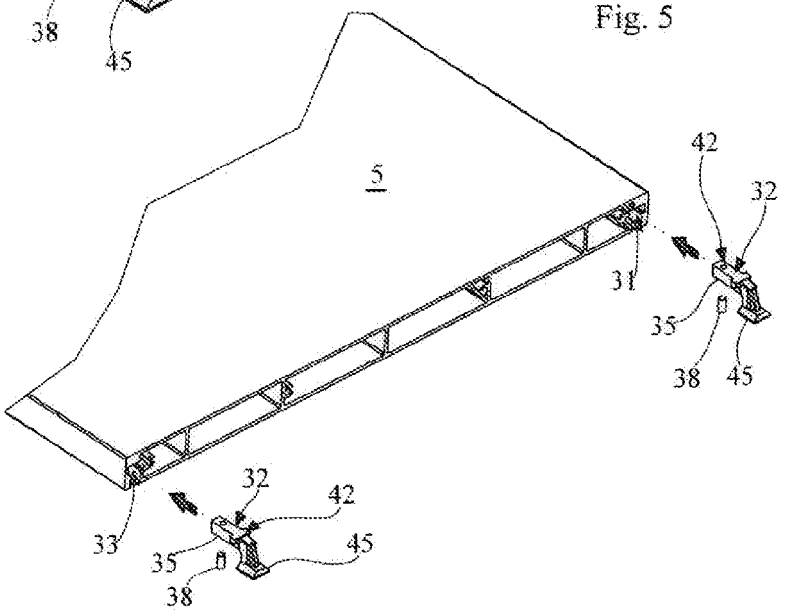


Fig. 6

Fig. 5



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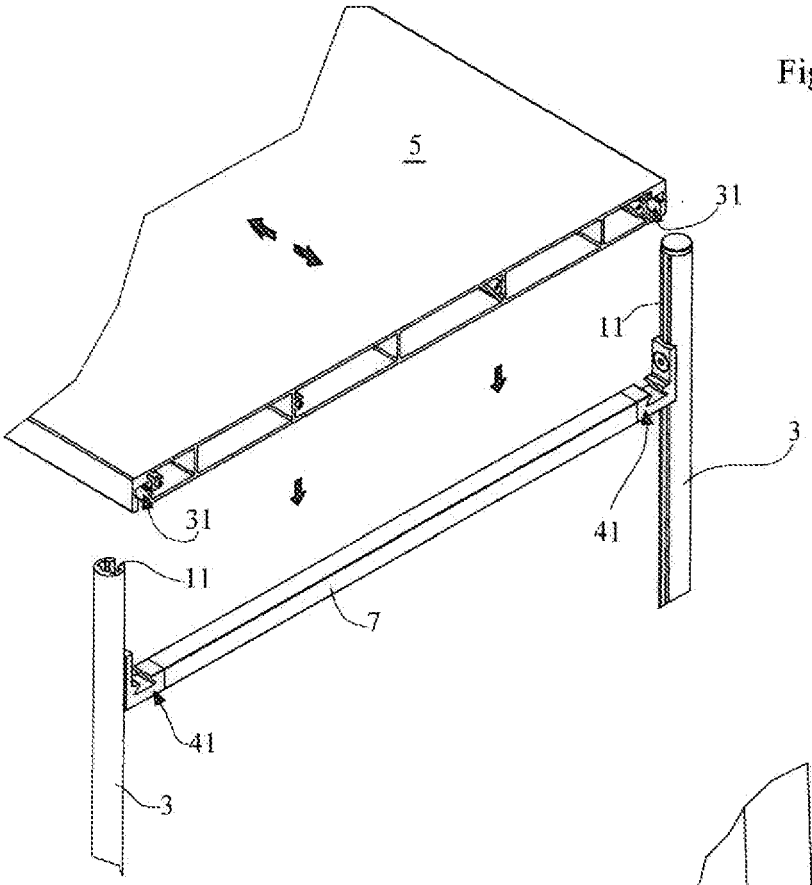

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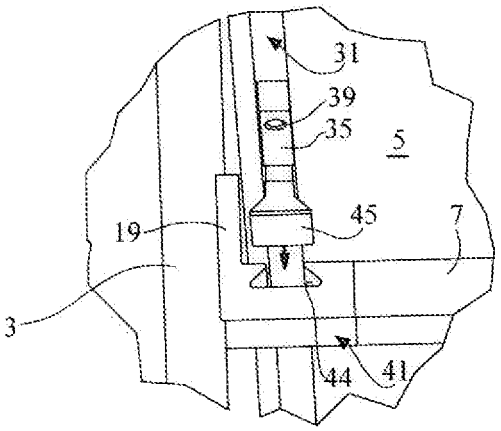

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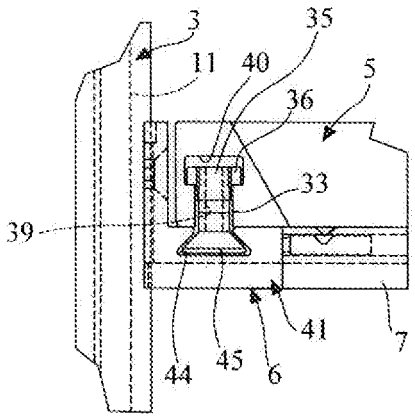


Fig. 10

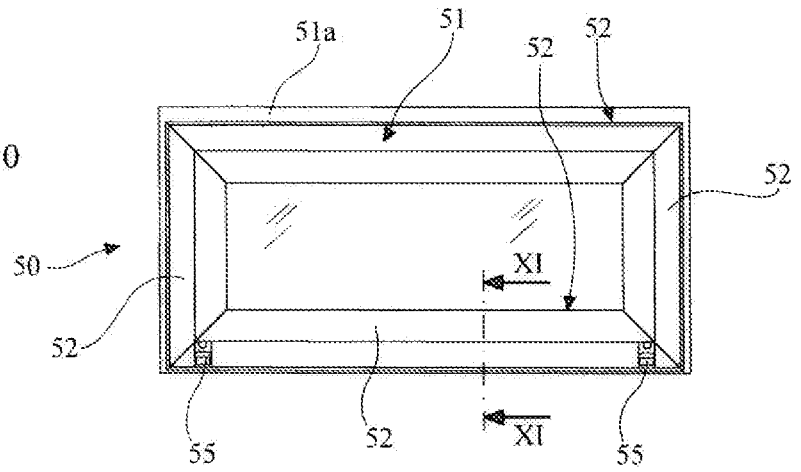


Fig. 11

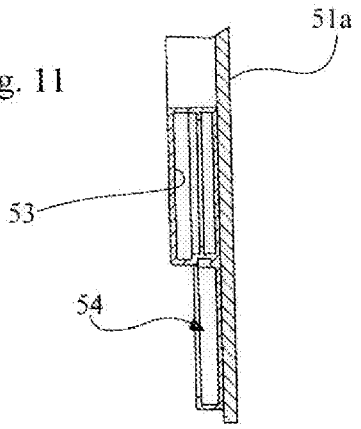


Fig. 12

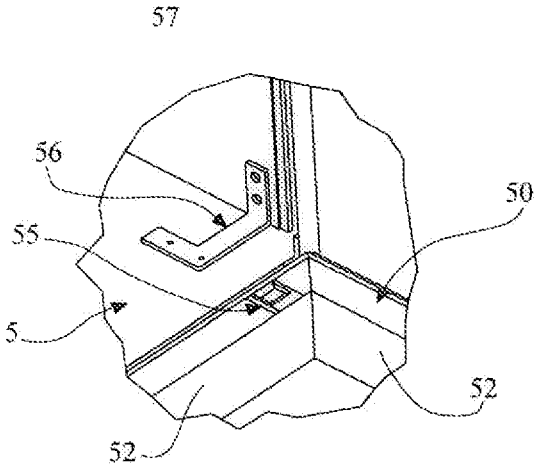
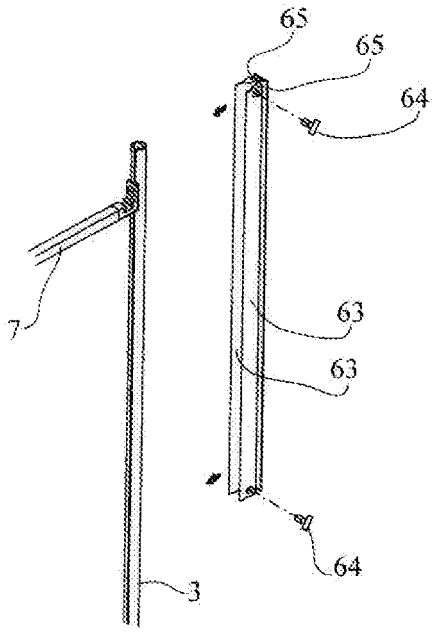


Fig. 13



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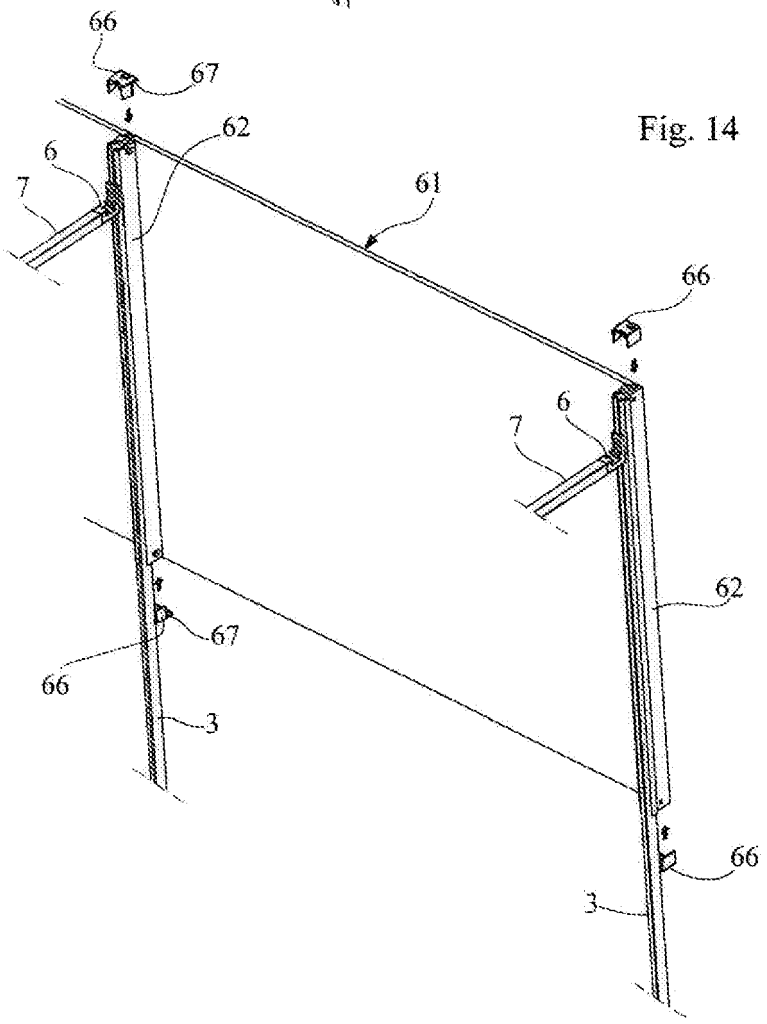


Fig. 15

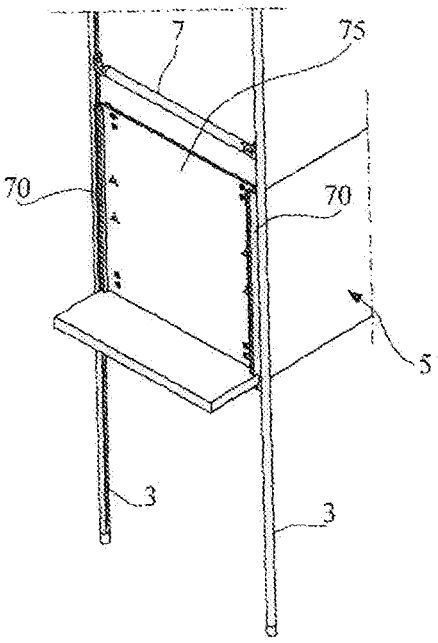


Fig. 16

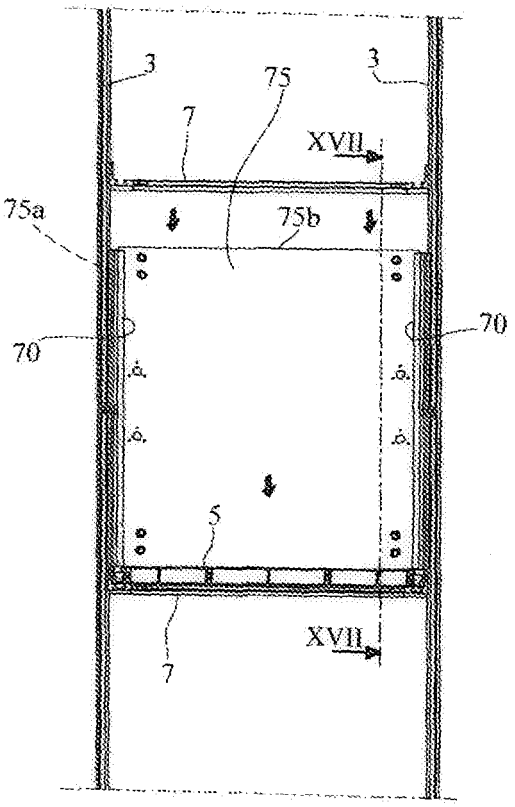


Fig. 17

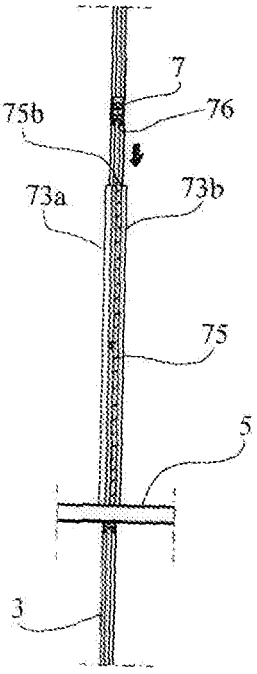


Fig. 10a

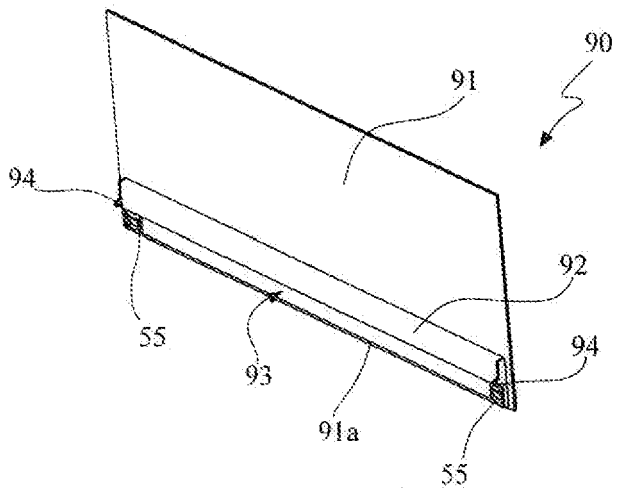


Fig. 11a

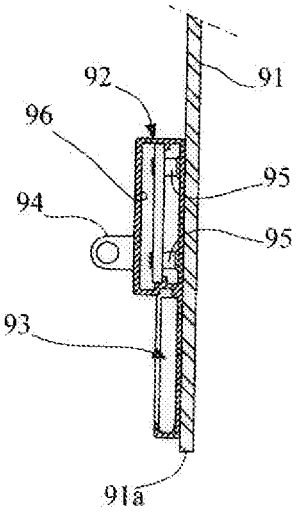


Fig. 18a

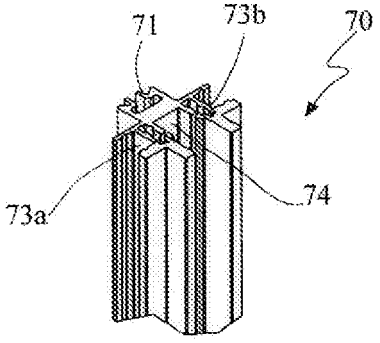


Fig. 18b

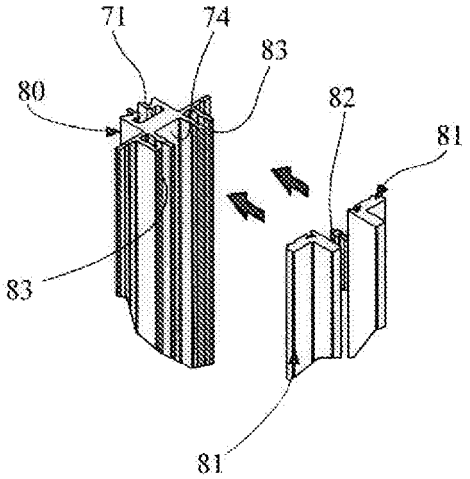


Fig. 19a

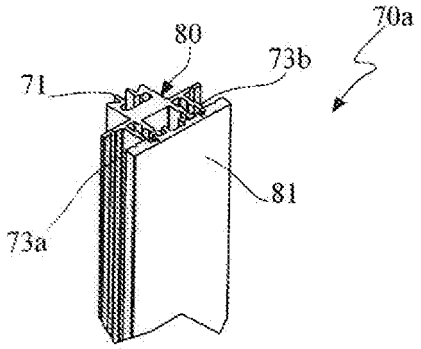


Fig. 19b

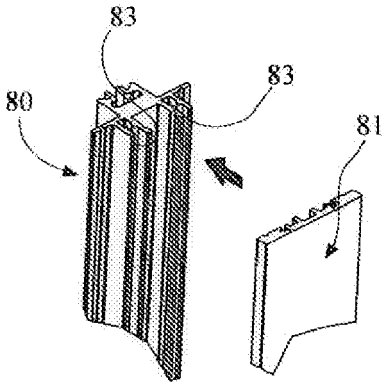


Fig. 20a

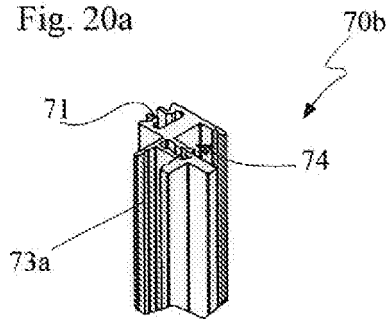


Fig. 20b

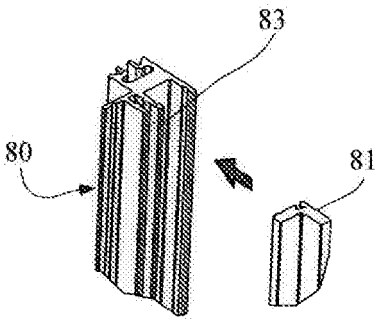


Fig. 21a

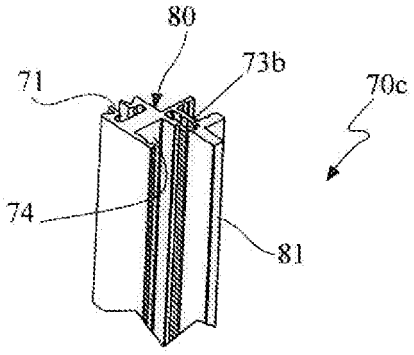
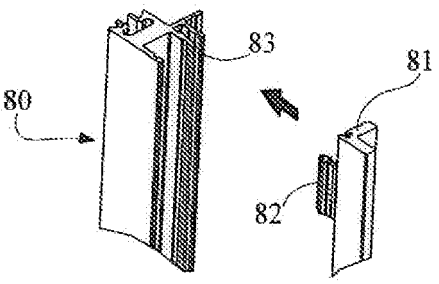


Fig. 21b



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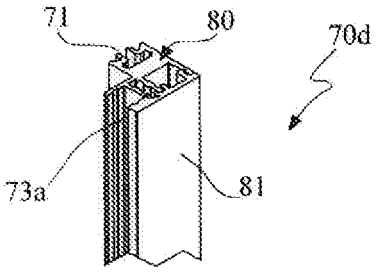
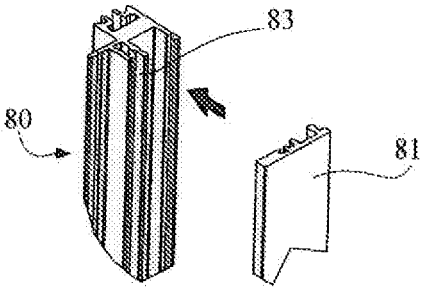


Fig. 22b



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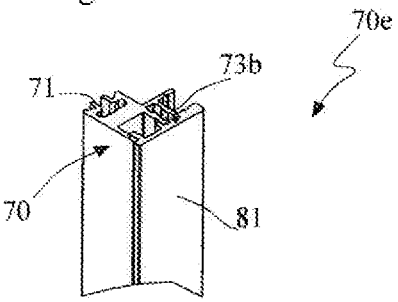

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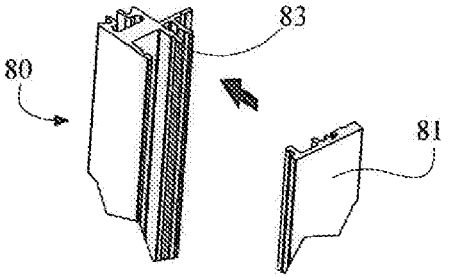
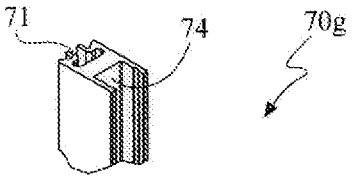


Fig. 24



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EUROPEAN SEARCH REPORT

Application Number
EP 10 16 9429

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 1 862 093 A1 (CHEN KUANG-PING [TW]) 5 December 2007 (2007-12-05) * abstract; figures *	1-14	INV. A47B57/26
A	US 2004/080249 A1 (HARVIE WILLIAM [US] HARVIE III WILLIAM [US]) 29 April 2004 (2004-04-29) * abstract; figures *	1-14	
A	US 2004/155161 A1 (YEH JURRY [TW]) 12 August 2004 (2004-08-12) * abstract; figures *	1-14	
A	DE 20 2006 000268 U1 (ZONA DEV CO [TW]) 9 March 2006 (2006-03-09) * abstract; figures *	1-14	
			TECHNICAL FIELDS SEARCHED (IPC) A47B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	9 November 2010	MacCormick, Duncan

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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DE 202006000268 U1	09-03-2006	NONE	

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Patent documents cited in the description

- US 2008048081 A **[0003]**