COORDINATED SYSTEM FOR REMOVEABLE FASTENING OF FURNITURE ELEMENTS TO THE BEARING STRUCTURE OF A PREFABRICATED WALL

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ABSTRACT
In a prefabricated wall, a frame of the wall is formed by uprights and crossbars obtained from tubular bars. A coordinated connection system is aimed at removeably fastening furniture elements to the frame using longitudinal undercut grooves made in the tubular bars. First and second clamp means for hanging furniture elements, such as shelves and wall hanging elements, engage with the undercut grooves arranged both in horizontal and vertical, and fasten the cantilevered supports to the tubular bars by screw tightening. The cantilevered supports carry, position and fix the furniture elements. Also first and second multiple joining means for bearing furniture elements, such as desk tops, or structural elements, such as support feet of the wall, engage with the undercut grooves and fasten the bearing or structural furniture elements to the tubular bars by screw tightening.
COORDINATED SYSTEM FOR REMOVEABLE FASTENING OF FURNITURE ELEMENTS TO THE BEARING STRUCTURE OF A PREFABRICATED WALL.

FIELD OF THE INVENTION

[0001] The invention relates to fittings for office furniture and the like items.

[0002] In particular, the invention is aimed at being incorporated into prefabricated partition walls, which are commonly used to subdivide open spaces or big rooms into more, functional small rooms.

BACKGROUND OF THE INVENTION

[0003] It is generally known that prefabricated partition walls, which are commonly used to subdivide open spaces, include substantially a bearing structure, or frame, and buffer panels, which close the openings delimited by the bearing structure elements.

[0004] The bearing structure is generally obtained by joining uprights and crossbars, made of tubular bars of extruded aluminum or press-shaped metal sheets.

[0005] In both cases, the profile of the above elements form grooves, shaped edges and the like, which cooperate functionally with suitable joints for allowing assembling of the different structure elements. The joints are also provided for the connection of the above mentioned elements with other elements for mounting buffer panels and for support and/or anchorage of the wall.

[0006] In the walls, the buffer panels do not fit properly against one another, but they are rather separated by connection gaps of different width, not only for functional purpose, but also for aesthetic reason, in order to avoid possible alignment inaccuracy between one panel and another, which would be unshapely, and to give to the whole a better stylistic “softness” in possible combinations of solid, transparent and semi-transparent panels.

[0007] The connection gaps are in most cases filled, or even defined by the tubular bars used to compose the structure, since the sides of each buffer panel are placed in contact with respective sides of the bars which delimit internally the opening to be closed.

[0008] Some types of tubular bars, made of extruded aluminum, as well as of press-shaped metal sheets, e.g. the ones protected by the Patent Application No. BO 2005A 000074 of this Applicant, have longitudinal undercut grooves (that is having the inlet width smaller than the inside width), which match with the above mentioned connection gaps when the wall is mounted.

[0009] A rational use of the spaces and more flexibility of furniture composition require oftener and oftener the possibility to assemble the furniture elements, such as desks, shelves, wall units and the like, to the partition walls.

[0010] Moreover, some uses require partition walls, which can be self-bearing or which can be placed and moved rapidly; for this purpose, see e.g. the technical teachings proposed by the Patent Application No. BO 2005A 000076 of this Applicant.

SUMMARY OF THE INVENTION

[0011] The object of the present invention is to propose a coordinated system for removable fastening of furniture elements to the bearing structure of a partition wall, in which said structure is made of properly shaped tubular bars of extruded aluminum or press-shaped metal sheets, with said system using, as fastening points, undercut grooves made in said tubular bars which match with the connection gaps between adjacent buffer panels, both in horizontal direction and in vertical direction, which separate buffer panels from one another.

[0012] Another object of the present invention is to propose a system, which can be applied with help of only one, simple tool and without any particular skill.

[0013] A further object of the present invention is to propose a system, by which stable and strong connections for the connected furniture elements can be obtained. At the same time, the connections should not negatively affect the aesthetic result obtained.

[0014] A still further object of the present invention is to propose a system composed of simple, versatile and cheap elements.

[0015] The above mentioned objects are achieved, in accordance with the invention, by a coordinated system for removable fastening of furniture elements to a bearing structure of a prefabricated partition wall, with the bearing structure including:

[0016] a frame composed of mutually connected uprights and crossbars formed by tubular bars;

[0017] buffer panels inserted between respective sides of the tubular bars;

[0018] a longitudinal undercut groove made in each of said tubular bars;

[0019] with the coordinated system including:

[0020] screw fastening means designed for engaging with said undercut grooves of said tubular bars arranged horizontal or vertical, for fastening, to said tubular bars, either cantilevered supports, carrying hanging furniture elements, or bearing or structural furniture elements, to be connected to said wall.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] The characteristic features of the invention will be pointed out in the following description of preferred embodiments of the elements of the proposed coordinated system, in accordance with the claims and with reference to the enclosed figures, in which:

[0022] FIG. 1 is a sectional view of a tubular bar made of extruded aluminum, with a corresponding first clamp fastened thereto;

[0023] FIG. 2 is a sectional view of a tubular bar made of press-shaped metal sheet, with a corresponding second clamp fastened thereto;

[0024] FIG. 3 shows, in the same view as FIG. 2, the introduction of an element of the relative clamp into the groove of the tubular bar.
FIG. 4 is a perspective view of another element of the second clamp;
FIG. 5 is a lateral view of a first hanging furniture element, associated to the wall;
FIG. 6 is a lateral view of a second hanging furniture element, associated to the wall;
FIG. 7 is a section view of the tubular bar of FIG. 1, to which a first multiple fastening member is associated;
FIGS. 8A and 8B show subsequent introduction of a particular element of a second multiple fastening member into the groove of the tubular bar of FIG. 2;
FIG. 9 is a lateral view of a wall support foot, fastened to the multiple fastening member of FIG. 7 or to one of FIGS. 8A, 8B.

DISCLOSURE OF THE PREFERRED EMBODIMENTS

Having reference to the above Figures, the reference letter P indicates a partition prefabricated wall of known type, including a bearing structure defined, in turn, by a frame.

The frame is composed of uprights M and crossbars T, mutually connected by suitable joints (not shown). Buffer panels S are fastened to the uprights and to the crossbars to close the openings delimited by the uprights M and the crossbars T.

In particular, the uprights M and the crossbars T are made of tubular bars, e.g. of the type protected by the Applicant by the Patent Applications mentioned before; a first type of tubular bar 100 (FIGS. 1, 7) is obtained from extruded aluminum bars, while a second type 200 (FIGS. 2, 3, 8A, 8B) is made from press-shaped metal sheets.

As has already been mentioned in the introductory note, after mounting, respective faces of the tubular bars 100, 200 remain interposed between buffer panels S.

As shown in FIGS. 1 and 2, the sides of the panels are placed in contact with corresponding sides of the uprights and crossbars which delimit internally the openings to be closed.

The tubular bars 100, 200, have a longitudinal undercut groove 101, 201 accessible from the corresponding side of the wall P.

The coordinated system, proposed by the present invention, includes various anchoring means, which use the undercut grooves 101, 201 as points of attachment to the wall, so as to allow fastening of different furniture elements, as it will be better explained later on.

Obviously, the shape of some elements of the anchoring means depends on the kind of element, of which the frame of the wall P is made, i.e. of the tubular bars 100 of extruded aluminum or of the tubular bars 200 of press-shaped metal sheets, although the undercut shape of the grooves 101, 201 is always utilized to fasten the anchoring means to the relevant tubular bar.

The coordinated system includes clamp means 102, 202, respectively the first type being designed for the extruded aluminum tubular bars 100 (FIG. 1), and the second type being designed for the metal-sheet tubular bars 200 (FIG. 2).

The clamp means 102, 202 engage with the horizontal grooves 101, 201, corresponding to the crossbars T, as well as with the vertical grooves, corresponding to the uprights M.

The first clamp means 102, corresponding to the extruded aluminum tubular bars 100 (FIG. 1), include a trapezoidal slider 103, which is dovetail-like joined to the groove 101 with a clearance, and which has a threaded hole 104, into which a threaded pin 106 can be screwed, with the interposition of a washer 105. The threaded pin 106 is integral with a support, better described later on, designed for being fastened to the wall in cantilevered fashion.

A shoulder 107 is defined between the threaded pin 106 and the cantilevered support, so as to push against the washer 105, due to the action of the pin being screwed.

This way, the corresponding portion of the tubular bar 100 is tightened between the washer 105 and the slider 103.

After the first clamp means 102 have been brought to the desired position along the groove 101, their fastening is completed, possibly with the help of a wrench or a lever, depending on the means of the cantilevered support and not shown in detail.

The difference between the second clamp means 202, corresponding to the metal-sheet tubular bar 200 (FIG. 2) and the first clamp means 102 lies in the shape of the relative slider 203. The slider 203 is neither trapezoidal nor wider than inlet section of the groove 201; also the washer 205 is different, as it has a pair of protrusions 205a, situated in positions diametrically opposite to each other (FIG. 4), going laterally in abutment against the edges 200a of the tubular bar 200, at the side of the groove 201.

The protrusions 205a are particularly advantageous, as they prevent the rotation of the washer 205 during the tightening, which would be otherwise very probable to happen, because of the limited contact area with the edges 200a, and of the consequently little friction.

According to a preferred constructive embodiment, the slider 203, shown in FIGS. 2, 3, has, with respect to its width, two rounded opposite sides 203a, and its thickness is smaller than the width of the inlet section of the groove 201, so that it can be introduced with its front part (FIG. 3) and then rotated to the position, in which the relative threaded hole 204 can receive a threaded pin 206, similar to the other pin 106, and likewise integral with a corresponding cantilevered support.

Also in this case, a shoulder 207 is defined between the threaded pin 206 and the cantilevered support, aimed at pushing against the washer 205, due to the action of the pin being screwed, so that the edges 200a of the tubular bar 200 are tightened between the washer 205 and the slider 203.

The ways of positioning and fastening of the second clamp means 202 are the same as of the first clamp means 102.

The above mentioned cantilevered support, integral with the pin 106 or with the pin 206, can assume
different shapes, each of which is designed explicitly for a particular hanging furniture element.

[0051] In a first example, shown in FIG. 5, the cantilevered support 30 protrudes horizontally, to carry a shelf 40. In such case, another identical support is situated at a suitable distance and at the same height as the first mentioned support.

[0052] In another example, shown in FIG. 6, the cantilevered support 50 is shaped in such a way, as to be introduced into a seat 61 of a wall unit 60, and to cooperate with known tightening means, not shown, so as to hold the wall unit.

[0053] The system includes also multiple joining means 122, 222, respectively, first joining means 122 for the extruded aluminum tubular bar 100 (FIG. 7), and second joining means 222 for the press-shaped metal sheet tubular bar 200 (FIGS. 8A, 8B).

[0054] Also the joining means first and second 122, 222 engage with the horizontal grooves 101, 201, delimited by the crossbars T, as well as with the vertical grooves, corresponding to the uprights M.

[0055] The first multiple joining means 122, for the extruded aluminum tubular bar 100 (FIG. 7), include an elongated slider 123, having a trapezoidal cross-section and introduced into the undercut groove 101 in dovetail fashion with a clearance.

[0056] At least two parallel stud bolts 124 (only one of which is seen in FIG. 7), integral with the slider 123, protrude outward of the groove and are aimed at coupling, with interposition of respective washers 125, with relative threaded means 126, e.g. locking rings, connected to bearing furniture elements or structural elements, described in the following.

[0057] Likewise, the second multiple joining means 222, for the press-shaped metal sheet tubular bar 200, include an elongated slider 223, having a parallelepiped cross-section ad introduced into the groove 201.

[0058] At least two parallel stud bolts 224, integral with the slider 224, protrude outward of the groove and are aimed at coupling, with interposition of respective washers 225, having protrusions 225a, similar to the described washers 205, with relative threaded means 226, e.g. locking rings, connected to the same furniture or structural elements, mentioned above.

[0059] According to a preferred constructive embodiment, shown in FIGS. 8A and 8B, the elongated slider 223 can be decomposed into two parts 223a, 223b, along a diametric plane of the stud bolts 224.

[0060] One of the parts has, on this plane, a relief 223c, extended along the whole length of the slider 223 and aimed at being introduced into a complementary indentation 223d, made in the other part.

[0061] As it is clearly seen in FIGS. 8A, 8B, it is thus possible to introduce from the front side, i.e. through the opening of the groove 201, first one part and then the other one, consequently obtaining the coupling between the two parts by longitudinally sliding the parts along the groove 201.

[0062] The relief 223c and the indentation 223d ensure the centering of the two parts 223a, 223b, considering the axial direction of the stud bolts 224.

[0063] The great strength presented by the above mentioned multiple joining means 122, 222 allows the wall P to carry bearing furniture elements, such as desk tops, seat tops (not shown) and others.

[0064] FIG. 9 shows a wall P, which has support feet 70, fastened thereto by using the above mentioned multiple joining means 122, 222, introduced into the vertical grooves.

[0065] In this way, the wall P becomes self-bearing and suitable for all the applications, in which it must be positioned and moved rapidly.

[0066] Obviously, there are more possible applications of the proposed coordinated system than the described ones, which increases the freedom of the designers to create personalized environments, in which the spaces are used in a rational way, so as to offer the maximum functionality to the users.

[0067] All the described means ensure stable and strong fixtures for the associated furniture elements, and at the same time, are almost invisible from outside, after being assembled.

[0068] Another advantage of the proposed system lies in the fact that the assembling of the different elements does not require particular skill and they can be fastened by a simple tool.

[0069] The system elements are simple to manufacture, and consequently, their cost is particularly contained.

[0070] Moreover, it is possible to diameters and threading parts with the same dimensions, which allows to produce some elements with identical shape and dimension. In other words, the same elements can be used in different positions and with different tasks with the remarkable advantage of reducing the number of different elements.

[0071] It is understood that what above, has been described as a mere, not limiting example. Therefore, any possible detail changes applied to the described elements for constructive or functional reasons, thereto remain within the protection scope defined by the following claims.

What is claimed is:

1. A coordinated system for removable fastening of furniture elements to a bearing structure of a prefabricated partition wall, with the bearing structure including:

   a frame composed of mutually connected uprights and crossbars formed by tubular bars;

   buffer panels inserted between respective sides of the tubular bars;

   a longitudinal undercut groove made in each of said tubular bars;

   with the coordinated system including:

   - screw fastening means designed for engaging with said undercut grooves of said tubular bars arranged horizontal or vertical, for fastening, to said tubular bars, either cantilevered supports, carrying hanging furniture elements, or bearing or structural furniture elements, to be connected to said wall.

2. A coordinated system, according to claim 1, wherein said uprights and crossbars are made of tubular bars of extruded aluminum, and said screw fastening means are constituted by clamp means including:
a slider with a trapezoidal cross-section, designed for being introduced into the undercut grooves in dovetail fashion and with clearance, with a threaded hole made in said slider;

at least one threaded pin made integral with each one of said cantilevered supports and designed for being screwed into said threaded hole of said slider;

a washer to be interposed between said cantilevered supports and a relevant upright or crossbar;

a shoulder made is each one of said cantilevered supports for pushing against said washer due to screwing of said pin.

3. A coordinated system, according to claim 1, wherein said uprights and crossbars are made of press-shaped metal sheets with said undercut groove featuring a longitudinal inlet section narrower than the inside section, and said screw fastening means are constituted by clamp means including:

a slider wider than said longitudinal inlet section of said undercut grooves and designed to be introduced into a relevant groove with a clearance, with a threaded hole made in said slider;

at least one threaded pin integral with each one of said cantilevered supports and designed to be screwed into said threaded hole of a relevant slider;

a washer to be interposed between a cantilevered support and a relevant upright or crossbar;

a shoulder made is each one of said cantilevered supports for pushing against said washer due to screwing of said pin.

4. A coordinated system, according to claim 3, wherein said has at least one dimension less wide than the width of the undercut groove inlet section and two opposite round ends, so that it can be introduced in a relevant undercut groove and rotated to remain locked within said undercut groove.

5. A coordinated system, according to claim 3, wherein said washer has a pair of protrusions, diametrically opposite, going laterally in abutment against the edges of said tubular bar, at the side of the undercut groove, with said protrusions preventing the rotation of the washer during tightening of the clamp means.

6. A coordinated system, according to claim 1, wherein said cantilevered support extends horizontally and a shelf is carried by said cantilevered support.

7. A coordinated system, according to claim 1, wherein said cantilevered support is shaped in such a way, as to be introduced into a seat, made in a wall, and to cooperate with tightening means, connected to the said wall.

8. A coordinated system, according to claim 1, wherein said uprights and crossbars are made of tubular bars of extruded aluminum, and said screw fastening means are constituted by clamp means including:

an elongated slider with a trapezoidal cross-section, designed for being introduced into the undercut grooves in dovetail fashion and with clearance, with a threaded hole made in said slider;

at least two parallel stud bolts connected to said slider and protruding outward of said wall and engaging with threaded means connected to said bearing or structural furniture elements;

9. A coordinated system, according to claim 8, wherein said bearing or structural elements are desk tops.

10. Coordinated system, according to claim 8, wherein said bearing or structural elements are desk tops.

11. Coordinated system, according to claim 8, wherein said structural elements are support feet, made integral with said wall, so as to make said wall self-bearing.

12. A coordinated system, according to claim 1, wherein said uprights and crossbars are made of press-shaped metal sheets with said undercut groove featuring a longitudinal inlet section narrower than the inside section, and said screw fastening means are constituted by clamp means including:

an elongated slider with parallelepiped cross-section and wider than said longitudinal inlet section of said undercut grooves and designed to be introduced into a relevant undercut groove with a clearance;

at least two parallel stud bolts connected to said slider and protruding outward of said wall and engaging with threaded means connected to said bearing or structural furniture elements;

at least two washers respectively interposed between said bearing or structural furniture elements and relevant tubular bars.

13. A coordinated system, according to claim 12, wherein said bearing furniture elements are desk tops.

14. Coordinated system, according to claim 12, wherein said bearing furniture elements are desk tops.

15. Coordinated system, according to claim 12, wherein structural elements are support feet, made integral with said wall, so as to make said wall self-bearing.

16. A coordinated system, according to claim 12, wherein each of said washers has a pair of protrusions, diametrically opposite, going laterally in abutment against edges of said relevant tubular bar, at the side of the undercut groove, with said protrusions preventing rotation of the washer during tightening of said clamp means.

17. A coordinated system, according to claim 12, wherein said elongated slider can be decomposed into two parts, along a diametric plane of said stud bolts, with one part of said parts provided with has a relief extending in said diametric plane along the whole length of said slider, whereas the other part of said parts has an indentation extending in said diametric plane along the whole length of said slider, said relief and indentation defining centering means for said parts;

each part of said parts being then inserted separately through the inlet section of the relevant undercut groove and coupled so that said relief is introduced into said indentation.

18. A coordinated system, according to claim 1, wherein said bearing furniture elements are desk tops.

19. Coordinated system, according to claim 1, wherein said bearing furniture elements are desk tops.

20. Coordinated system, according to claim 1, wherein said structural elements are support feet, made integral with said wall, so as to make said wall self-bearing.

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