The present invention provides a connection structure for partition walls. The connection structure enables easy connection or disconnection of the frames of a partition wall to or from each other by manipulating a locking lever rotatably coupled to a locking bar. Further, the connection structure can easily realize an increase in the height of a post, required according to an increase in the height of a partition wall, by vertically connecting a plurality of posts to each other using a post cap.
CONNECTION STRUCTURE FOR PARTITION WALLS

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates, in general, to connection structures for partition walls and, more particularly, to a connection structure for partition walls, which enables easy connection or disconnection of the frames of a partition wall to or from each other by manipulating a locking lever rotatably coupled to a locking bar and can allows easy increase of the height of a post, required according to an increase in the height of a partition wall, by vertically connecting a plurality of posts to each other using a post cap.

[0003] 2. Description of the Related Art

[0004] To respect privacy, a closed office space in which a plurality of small-sized rooms is arranged along both sides of a longitudinal hallway has been typically used as a business space. In recent years, to save business space and increase spatial efficiency, to allow business furniture and a variety of business facilities to be easily moved to desired places according to their functions and purposes, and to remove fixed walls and doors from the business space so as to realize free movement of persons and easy communication between individuals in the business space, an open business space is also popular.

[0005] However, the open business space is problematic in that it cannot absorb noise and cannot provide privacy. Thus, in an effort to solve the problem of the conventional open business space, partition walls filled with soundproof material have been preferably used to partition the business space into a desired number of compartments. In the prior art, a variety of partition walls having various purposes and various shapes have been proposed and used.

[0006] Partition walls have been recognized as very important business furniture, which can protect private life and can increase business efficiency of individuals or departments.

[0007] Partition walls having the above-mentioned purposes have been manufactured as modules, which have predetermined heights and widths and can be easily built. At least two partition walls may be connected to each other and placed at a desired position to form a wall of a compartment.

[0008] However, because the conventional partition walls have been manufactured as two or three types of modules, which have predetermined standardized heights and widths, a user cannot freely select partition walls. Furthermore, when a user selects partition walls having predetermined sizes, the sizes of the partition walls may not precisely meet the actual sizes of designed compartments, but the user must unwillingly use the supplied partition walls having the standardized sizes according to a contract.

[0009] In an effort to solve the above-mentioned problem, Korean Utility Model Registration No. 284702 discloses a partition wall that has a height adjustable structure for easily adjusting the height thereof, as shown in FIG. 1.

[0010] As shown in the drawing, the conventional partition wall having the height adjustable structure comprises a plurality of finishing members 1, 2 and 3, a frame part 4, and a plurality of panels 12. The frame part 4 comprises an upper frame 6 and a lower frame 7, which are integrated together into a single frame body along with posts 5 outside the two frames 6 and 7.

[0011] The upper frame 6 has a closed rectangular shape, which is closed at the upper, lower, left and right sides thereof, with about two electric wire holes 8 formed in each of the upper and lower sides to allow electric wires to pass therethrough, and locking holes 11 formed in each of the left and right sides, so that the upper frame 6 can be fastened to the posts 5 using locking bolts 10.

[0012] The lower frame 7 is a support, and is opposite the upper frame 6. In the same manner as that described for the upper frame, the lower frame 7 has a closed rectangular shape closed at the upper, lower, left and right sides thereof. About two electric wire holes 8 are formed in each of the upper and lower sides of the lower frame 7, and locking holes 11 are formed in each of the left and right sides, so that the upper frame 6 can be fastened to the posts 5 using locking bolts 10.

[0013] Each of the posts 5, to which the upper frame 6 and the lower frame 7 are fastened at both left and right sides of the frames to form the frame unit 4, comprises electric wire holes 9 at predetermined positions of the outer surface thereof. Locking holes 11 are formed in each of the posts 5 at predetermined positions, so that the upper and lower frames 6 and 7 can be fastened to the posts 5.

[0014] Panels, tiles or other finishing materials are fastened to the frame part 4 having the above-mentioned construction, thus forming a partition wall. The plurality of finishing panels 12, having a plurality of locking holes 14, is fastened to the front surfaces of the posts 5 at predetermined positions using locking bolts 13. An upper finishing member 1, two corner finishing members 2 and two side finishing members 3 are fastened to the upper ends and the outer surfaces of the two posts 5, thus finishing the partition wall. A height adjustment bolt 15 is mounted to the lower end of each of the posts 5, so that the height of the partition wall can be adjusted as desired.

[0015] However, the above-mentioned conventional partition wall is problematic in that, to adjust the height of the partition wall, the upper and lower frames must be fastened to the posts using locking bolts after the gap between the upper and lower frames has been changed and, thereafter, the panels must be fastened to the posts, so that the locking bolts must be tightened or loosened one by one when assembling or disassembling the partition wall, thus being inconvenient to users.

SUMMARY OF THE INVENTION

[0016] Accordingly, the present invention has been made keeping in mind the above problems occurring in the related art, and an object of the present invention is to provide a connection structure for partition walls, which enables easy connection of the frames of a partition wall to each other by bringing the frames into a close and secure connection state using a simple locking bar after placing a new frame on top of an existing frame to increase the height of an existing partition wall, and which can easily realize an increase in the height of a post, required according to an increase in the height of the partition wall, by vertically connecting a plurality of posts to each other using a post cap interposed between the posts.
In order to achieve the above object, according to one aspect of the present invention, there is provided a connection structure for partition walls comprising: a plurality of rectangular frames connected to each other in a horizontal direction and in a vertical direction, thus forming a partition wall, the frames of the partition wall being supported by posts at the outermost sides thereof, with a plurality of longitudinal holes having a rectangular shape formed at predetermined positions, spaced apart at predetermined intervals, on each of the frames; a locking bar inserted into the aligned longitudinal holes of the facing frames; a locking protrusion provided at a lower end of the locking bar such that, when the locking protrusion is rotated at an undetermined angle after the locking protrusion has passed through a lower one of the aligned longitudinal holes, the locking protrusion is caught by the lower one of the aligned longitudinal holes and prevents the locking bar from being removed from the aligned longitudinal holes; a locking lever rotatably coupled to an upper end of the locking bar such that, when the locking lever is rotated in a closing direction after the locking protrusion has been caught by the longitudinal holes when the locking lever is in an opened state, the locking lever brings facing sides of the frames into close connection with each other; a compression protrusion provided at a predetermined position of the locking lever to compress the facing frames and closely connect the frames to each other; and a post cap interposed between the posts to extend the vertical height of the posts according to the increase in the height of the frames connected to each other in the vertical direction.

Each of the frames may be provided with a fitting rail on a lower side thereof, so that when the frame is placed on top of a lower frame, the fitting rail can be inserted into and connected to an upper side of the lower frame.

The post cap may be provided with four locking projections on each of upper and lower surfaces thereof at four corners to be inserted into the posts to connect the posts to each other.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description when taken in conjunction with the accompanying drawings, in which:

FIG. 1 is an exploded perspective view illustrating a partition wall having a conventional connection structure;
FIG. 2 is a front view illustrating a partition wall according to an embodiment of the present invention;
FIG. 3 is an exploded perspective view illustrating a state of frame connection of the partition wall according to the embodiment of the present invention;
FIGS. 4a through 4c are views illustrating a process of connecting frames of the partition wall according to the embodiment of the present invention; and
FIG. 5 is an exploded perspective view illustrating a state of post connection of the partition wall according to the embodiment of the present invention.

The drawings are not intended to show all details of commercially available apparatus, equipment, systems, etc., but are by way of example to best illustrate the principles of the present invention. These drawings may be best understood by those skilled in the art for their intended purposes. Further, the dimensions are for purposes of illustration only and are not intended to be limiting as to the scope of this invention.

DETAILED DESCRIPTION OF THE INVENTION

Reference will now be made in greater detail to a preferred embodiment of the invention, an example of which is illustrated in the accompanying drawings. Wherever possible, the same reference numerals will be used throughout the drawings and the description to refer to the same or like parts.

FIG. 2 is a front view illustrating a partition wall according to an embodiment of the present invention. FIG. 3 is an exploded perspective view illustrating a state of frame connection of the partition wall according to the embodiment of the present invention. FIGS. 4a through 4c are views illustrating a process of connecting frames of the partition wall according to the embodiment of the present invention.

FIG. 5 is an exploded perspective view illustrating a state of post connection of the partition wall according to the embodiment of the present invention.

As shown in FIGS. 2 and 3, the partition wall according to the preferred embodiment of the present invention comprises a plurality of frames 100, which have rectangular shapes and are connected to each other in a vertical direction and in a horizontal direction, thus forming the partition wall to partition a business space into cubicles.

Each of the frames 100 has a rectangular shape, with a finishing panel 102 closing the central opening of each frame 100 to improve the appearance of the frame 100.

Each of the frames 100 has a plurality of locking holes 108 along each side thereof, and the finishing panel 102 is provided with a plurality of locking lugs (not shown) to be locked in the locking holes 108 of the frame 100. Thus, the finishing panel 102 can be easily attached to or easily detached from the frame 100.

After a desired number of frames 100 has been connected to each other in the vertical direction and in the horizontal direction, an upper cover 101 is fastened to the upper edge of the connected frames 100, and a side cover 103 is connected to the side edge of the connected frames 100.

Each of the frames 100 has a longitudinal fitting groove 109 along sides thereof, and each of the upper cover 101 and the side covers 103 has two parallel fitting rails (not shown), which can be inserted into the fitting groove 109 and come into close contact with the opposite inner surfaces of the fitting groove 109, so that the covers 101 and 103 can be fastened to the frame 100.

To connect a plurality of frames 100 to each other in the vertical direction and in the horizontal direction to form a partition wall, a locking bar 110 is used.

In the present invention, a predetermined number of frames 100 can be connected to each other in the horizontal direction, and a predetermined number of frames 100 can be placed in the vertical direction such that one is laid on top of another and, thereafter, the frames are locked to each other using locking bars 110.

Furthermore, the height of the connected frames 100 can be easily adjusted by simple manipulation of the locking bars 110.

In the present invention, a plurality of frames 100 is placed in the vertical direction such that one is laid on top of another. In the above state, engaging rails 107 are formed along a lower side of an upper frame 100, so that, when the
frames 100 are connected to each other in the vertical direction, the engaging rails 107 can be fitted into the fitting groove 109 formed along the upper side of a lower frame 100, thus connecting the frames 100 to each other.

[0038] Each of the frames 100 has a plurality of longitudinal holes 106 at predetermined positions, spaced apart from each other, along the sides thereof.

[0039] Each of the longitudinal holes 106 has a rectangular shape.

[0040] Thus, when a predetermined number of frames 100 is connected to each other in the vertical direction or in the horizontal direction, the longitudinal holes 106 of the frames 100 are aligned with each other along straight lines.

[0041] A locking bar 110 is inserted into the aligned longitudinal holes 106.

[0042] The locking bar 110 has a locking protrusion 112 at the lower end thereof. A locking lever 114 is coupled to the upper end of the locking bar 110.

[0043] The locking bar 110 has a cylindrical column shape, and the locking protrusion 112 has a rectangular block shape similar to the shape of the longitudinal hole 106.

[0044] Thus, the locking protrusion 112 can pass through the aligned longitudinal holes 106 of the frames 100, which are connected to each other in the vertical direction or in the horizontal direction.

[0045] After the locking protrusion 112 has completely passed through the aligned longitudinal holes 106 of the frames 100, the locking bar 106 is rotated to cause the rectangular locking protrusion 112 to be caught by the longitudinal locking holes 106. Thus, the locking protrusion 112 can be prevented from being removed from the locking holes 106.

[0046] The locking lever 114 is rotatably coupled to the locking bar 110.

[0047] In other words, the locking lever 114 is coupled by a hinge pin 116 to the locking bar 110, so that the locking lever 114 can be rotated relative to the locking bar 110.

[0048] The locking bar 110 having the locking protrusion 112 is inserted into the aligned longitudinal holes 106 in a state in which the locking lever 114 is opened around the hinge pin 116 relative to the locking bar 110, as shown in FIG. 4b.

[0049] After the locking protrusion 112 has completely passed through the aligned longitudinal holes 106 of the frames 100, the locking bar 106 is rotated around its axis by rotating the locking lever 114, thus causing the rectangular locking protrusion 112 to be caught in the aligned locking holes 106, as shown in FIG. 4b. Furthermore, the locking lever 114 is also rotated around the hinge pin 116 of the locking bar 110 in the opposite direction.

[0050] While the locking lever 114 is rotated around the hinge pin 116 in the opposite direction as shown in FIG. 4c, the locking lever 114 compresses the inner surface of the frame 100 and brings the frames 100 into close and secure connection with each other.

[0051] Further, the locking lever 114 is provided with a compression protrusion 115 along a predetermined part of the lever 114 at which the lever 114 compresses the connected frames 100, so that the locking lever 114 can be eccentrically rotated to further compress the frames 100, thereby more securely connecting the frames 100 to each other.

[0052] Described in detail, when external force is applied to the locking lever 114 so as to rotate the lever 114 around the hinge pin 116 in the opposite direction, the lever 114 is eccentrically rotated due to the compression protrusion 115. In the above state, the lever 114 pulls the locking protrusion 112 and more closely, and securely connects the frames 100 to each other.

[0053] Thus, the frames 100 of the partition wall can be easily connected to each other in the vertical direction and in the horizontal direction using the locking bars 110 to increase the height and length of the partition wall. The frames 100 can also be easily disconnected from each other.

[0054] When a desired number of frames 100 has been placed such that one is laid on top of another to form a partition wall, the upper side and the left and right sides of the partition wall may be finished using the upper cover 101 and the side covers 103, thus protecting users from being injured by the sharp edges of the partition wall and improving the appearance of the partition wall.

[0055] When a new frame 100 is placed on top of an existing frame 100 and increases the height of the partition wall, as shown in FIG. 5, the height of the posts 120 supporting the frame 100 at opposite sides must be increased.

[0056] In the existing partition wall, the posts 120 are locked to the opposite sides of the existing frame 100 and support the frame 100 to prevent the frame 100 from falling.

[0057] Thus, each post 120 of the existing partition wall has a height equal to the height of the existing frame 100, so that, if a new frame 100 is placed on top of the existing frame 100, new posts 120 must be connected to the existing posts 120 so as to support the opposite sides of the new partition wall having the newly placed frame 100.

[0058] In the above state, the fastening of the posts 120 to the frames 100 can be realized using a conventional structure.

[0059] A post cap 130 is interposed between an existing post 120 and a new post 120.

[0060] The post cap 130 has a cross-section almost equal to the cross-section of each end of the posts 120, so that the cap 130 does not protrude outside the outer surfaces of the posts 120.

[0061] Further, to fasten the post cap 130 to the facing ends of the aligned posts 120, four locking projections 132 are formed at four corners of each of the upper and lower surfaces of the post cap 130 such that the four locking projections 132 do not protrude outside the outer circumferential surface of the post cap 130.

[0062] To receive the locking projections 132 of the post cap 130, four locking openings 122 are formed in each post 120 at positions corresponding to the locking projections 132.
In the partition wall of the present invention, a plurality of posts 120 can be connected to each other using a plurality of post caps 130 and can be fastened to the sides of a plurality of frames 100, which are placed in a vertical direction such that one is laid on top of another. Thus, the posts 120 can securely support the vertically connected frames 100.

The partition wall having the above-mentioned construction according to the embodiment of the present invention is built through the following process:

To connect a desired number of new frames 100 to an existing partition wall in the horizontal direction and/or in the vertical direction, the upper cover 101 and/or the side cover 103 of a frame 100 of the existing partition wall is removed.

Thereafter, a desired new frame 100 is placed adjacent to the existing frame 100, from which the upper cover 101 and/or the side cover 103 has been removed, such that the sides of the frames 100 face each other. The locking bar 110 having the locking protrusion 112 is inserted into a pair of aligned longitudinal holes 106 of the frames 100 until the locking protrusion 112 completely passes through the aligned longitudinal holes 106.

In the above state, the locking lever 114 is in an open state, in which the lever 114 has been opened around the hinge pin 116 relative to the locking bar 110.

Thereafter, the locking bar 106 is rotated around its axis by rotating the locking lever 114 clockwise or counterclockwise to cause the rectangular locking protrusion 112 to be caught in the longitudinal locking holes 106.

Further, the locking lever 114 is eccentrically rotated around the hinge pin 116 to compress the frames 100, thereby securely connecting the frames 100 to each other.

Thereafter, the exposed sides of the frames 100 are covered with the upper cover 101 and/or the side cover 103.

Further, the opposite sides of the frame 100, which has been newly placed on top of the existing frame 100, can be supported by the posts 120.

In the above state, new posts 120, individually having a height equal to the height of the new frame 100, are connected to the respective existing posts 120.

Described in detail, a post cap 130 is interpolated between an existing post 120 and an associated new post 120. In the above state, the locking projections 132 formed at the four corners of the post cap 130 are inserted into and engage with the locking openings 122 of the facing posts 120.

As apparent from the above description, the connection structure for partition walls according to the present invention provides advantages in that the frames of a partition wall can be easily connected to or disconnected from each other using a simple locking structure and a reduced number of parts, and, therefore, a desired increase in the height of the partition wall can be easily realized in a reduced period of time.

Furthermore, posts, which support the frames, can be easily extended using post caps, so that, when a new frame is placed on top of an existing frame to increase the height of an existing partition wall, the newly placed frame can be easily and securely supported by the extended posts.

Although a preferred embodiment of the present invention has been described for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

What is claimed is:

1. A connection structure for partition walls, comprising:
   a rectangular frame forming a partition wall in which one or more frames face each other and are connected together to form the partition wall, with a plurality of longitudinal holes having a rectangular shape formed at predetermined positions, spaced apart from each other, on each of the frames;
   a locking bar inserted into the aligned longitudinal holes of the facing frames;
   a locking protrusion provided at a lower end of the locking bar such that, when the locking protrusion is rotated at a predetermined angle after the locking protrusion has passed through a lower one of the aligned longitudinal holes, the locking protrusion is caught in the lower one of the aligned longitudinal holes and prevents the locking bar from being removed from the aligned longitudinal holes;
   a locking lever rotatably coupled to an upper end of the locking bar such that, when the locking lever is rotated in a closing direction after the locking protrusion has been caught by the longitudinal holes with the locking lever in an opened state, the locking lever brings facing sides of the frames into close connection with each other; and
   a compression protrusion provided at a predetermined position on the locking lever to compress the facing frames and closely connect the frames to each other.

2. A connection structure for partition walls, comprising:
   a plurality of rectangular frames connected to each other in a horizontal direction and in a vertical direction, thus forming a partition wall, the frames of the partition wall being supported by posts at outermost sides thereof, with a plurality of longitudinal holes having a rectangular shape formed at predetermined positions, spaced apart from each other, of each of the frames;
   a locking bar inserted into the aligned longitudinal holes of the facing frames;
   a locking protrusion provided at a lower end of the locking bar such that, when the locking protrusion is rotated at a predetermined angle after the locking protrusion has passed through a lower one of the aligned longitudinal holes, the locking protrusion is caught by the lower one of the aligned longitudinal holes and prevents the locking bar from being removed from the aligned longitudinal holes;
   a locking lever rotatably coupled to an upper end of the locking bar such that, when the locking lever is rotated
in a closing direction after the locking protrusion has been caught by the longitudinal holes with the locking lever in an opened state, the locking lever brings facing sides of the frames into close connection with each other;

a compression protrusion provided at a predetermined position of the locking lever to compress the facing frames and closely connect the frames to each other; and

a post cap interposed between the posts to extend a vertical height of the posts according to an increase in the height of the frames connected to each other in the vertical direction.

3. The connection structure for partition walls according to claim 1 or 2, wherein each of the frames is provided with a fitting rail on a lower side thereof, so that, when the frame is placed on top of a lower frame, the fitting rail is inserted into and connected to an upper side of the lower frame.

4. The connection structure for partition walls according to claim 2, wherein the post cap is provided with four locking projections on each of upper and lower surfaces thereof at four corners to be inserted into the posts to connect the posts to each other.