INTERLOCKABLE PARTITION PANEL AND METHOD OF FABRICATION THE SAME

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to partition panel and, more particularly, to partition panel with improvised locking mechanism to better align all adjacent partition panels to form a wall as well allowing adjustable width (or thickness) of such wall formed by the partition panels to suit commercial needs and preference. This present invention also relates to a method of fabrication such partition panel.

2. Description of the Related Art

Detachable and interlockable partition wall systems incorporating vertical panels, partitions, room dividers, and the like, are well known. In many instances of wall panel partition installations, it is desired that the partition wall system include a continuous wall from floor to ceiling and extension thereof. These panels are moveable from one location to another location.

Room divider systems are particularly popular in modern offices, since they allow large areas to be aesthetically and economically subdivided for maximum worker productivity. However, despite their flexibility, further improvements are desired. For example, most existing panel systems do not allow the exterior surfaces of the panels to be removed and replaced without significant effort and several tools. Other problems include the fitting of utility cables and the like, and in some instances, clips and attachment brackets are often used for partition panels to join together.

In many occasions, raceways and the like for routing electrical power and telecommunication cables therethrough are needed for partition panels. Improvements in this aspect of portable partition panels is also desired. For one, the raceways provided for laying in cables are difficult to access, and often require some disassembly of panels. Other systems require that the cables be strung or threaded into the raceways.

Thus, a panel system offering increased flexibility in panel placement, attachment, repair, and refurbishing is desired.

It is always a need to provide a partition panel and a method of fabrication the partition panel so as to allow faster assembling and disassembling of the partition panel. The layout of rooms and the demands of the size of the room need a plurality of partition wall to provide varying sizes so as to meet the changing needs for space and preference.

US Patent No: 4,546,590 discloses a modular partition system based on panels which are generally rectangular and have connector members on opposed sides of a central body. Each connector member includes female and male members joined by a stop element which is generally perpendicular to the body. The panels may be connected to one another to form a wall by either an abutting type or overlapping type connection. The modular partition system of US Patent o: 4,546,590 can be assembled or disassembled relatively rapidly, it does require the use of sheet metal screw or similar fastening elements to secure the panels together.

US Patent No: 3,128,851 tp Derider et al. relates to metallic structural members adapted to be formed that a plurality of the members may be interlocked. The metallic structural member described is particularly adapted for use as flooring in vehicles such as trucks, railway cars and so forth. For this reason, the structural member is provided with a hole through which a bolt can pass for attachment of the member to an underlying structure.

WO2007/084083 discloses a partition wall unit for receiving utility lines, the partition wall formed in addition to a pre-existing wall of a construction, the partition wall unit formed by at least a first panel, wherein the partition wall unit further includes an attachment means to attach the first panel to a further surface, the protrusion allowing the second surface of the first panel to be positioned spaced apart from the further surface; and wherein the spacing thus formed therebetween the second surface of the panel and the further surface for an enclosure to receive utility lines of a construction.

WO2011/123058 discloses a wall section comprising a ferro concrete member disposed between a first sideboard and a second sideboard. One of the first sideboard and the second sideboard is mechanically fastened to the ferro concrete member. The gap may be filled with insulation material.

Within current commercially available partition panels that used in industrial and residential buildings for internal partitions, and external walls and party walls, many shortcomings have been found and the present partition walls has effectively addressed these drawbacks. For instance, concealment of services, insulation, acoustic and weight of panel wall.

The present invention provides a modular construction adopting a standard sized and shaped panel to meet different customers' requirements and preference for the same space area. As requirement change, these panels can be easily disassembled and where possibly exist, to reuse to cut down on materials wastage. New panel walls requirement can easily and quickly

be assembled and erected to satisfy new preference from the same customer on existing property or to the new owner of the same property.

The present invention provides an enhanced lockable mechanism for partition panel which allows convenient layout of the utility lines such as electrical cables, water pipes or other conduits. The partition panels also can add an aesthetical appearance and can hide away the utility lines within the panels. These characteristics may not be found in the current available commercial products in the market.

SUMMARY OF THE INVENTION

A main object of the present invention is to provide a partition panel wall which allows the thickness (width) of each internal wall of the partition to cater to different acoustic needs of end users such as sound proofing and etc. The panel provides a 70mm thickness which creates greater lettable areas to the house/building. Large precast panel formed by numerous small panels allowing for hoisting and speedy construction of (both for internal and external) walls is also suggested.

It is an object of the present invention to provide a partition panel wall comprising a plurality of panels having protruded edge formed along the edges of the longer side of each panel defining a channel therebetween adapted to house cables and the like therein, and having a plurality of gap holes spaced apart along the lateral edge of eacg panel;

a first locking mechanism mounted at the gap holes; and

a second locking mechanism inserted into the first locking mechanism so that the panels are alignedly mounted and securedly formed as a partition wall.

Other object of the present invention is to provide a partition wall, wherein the first locking mechanism and the second locking mechanism lock the panels at the same plan to form a partition wall.

Still a further object of the present invention is to provide a partition panel wall, wherein the gap holes on the lateral side of each panel are configured to detachably detain the first locking mechanism on the panel.

Yet another object of the present invention is to provide a lateral standing partition panel for a room and the like, comprising

a plurality of panels formed into lateral partition wall having a first locking mechanism disposed at gap holes formed on each panel, and a second locking mechanism disposed at the first locking mechanism such that the panel wall is securedly mounted vertically; and

a channel formed between two protruded edges at the edge of each panel to retain utility cables or wires and the like.

Other objects and advantages of the present hinge invention will be apparent upon viewing the figures and reviewing the following specification and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of lockable partition panel in accordance with the present invention.

FIG. 2 is a perspective view of lockable partition panel, showing the mounting of a rebar crossing to two partition panels in accordance with the present invention.

FIG. 3 is a back view of the partition panel in accordance with the present invention.

FIG. 4 is a side view of the partition panel in accordance with the present invention.

FIG. 5 shows the top view of the partition panel in accordance with the present invention.

FIG. 6 is a front elevation view showing the locking mechanism in accordance with the present invention.

FIG. 7 is a side elevation view showing the locking mechanism in accordance with the present invention

DESCRIPTION OF THE PREFERRED EMBODIMENT

Reference is made in detailing the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings. The preferred embodiments of the present invention are not intended to limit the invention in its broadest aspect to these embodiments. On the contrary, the present invention is intended to cover alternatives, modifications and equivalents, which may be included within the spirit and scope of the present invention as defined by the appended claim.

With reference to FIGs. 1 and 2, there is shown a lockable partition panel 600 in accordance with a preferred embodiment of the present invention. The partition panel 600 is rigid and generally a rectangular shape. The longitudinal edge of the partition panel 600 is provided with a protruded edge 62, a plurality of gap holes 63, 65, 67 spaced apart being

formed on the protruded edges 62, for the affixing of a locking mechanism. In between the protruded edges 62, there is formed a recess 66. A plurality of screw holes 68 are formed on the surface of the partition panel 600 which is in alignment with the gap holes 63, 65, 67. The gap holes 63, 65, 67 are used for affixing an interlocking mechanism when two partition panels or more than two partition panels 600 are being arranged next to each other vertically and these partition panels 600 are locked together.

In the preferred embodiment, the shape and the size of the gap holes are not limited, and it can be round, cylindrical, square, rectangular, etc., and the size of the gap holes is that it allows a metal rod or metal strip as a locking mechanism to pass through. An example of the locking mechanism is aluminium extruded bracket, etc.

The partition panel 600 is fabricated from a concrete mix or the like. The present invention provides an affordable and light-weight partition system of panels that are rigid, strong, durable, eco-friendly, versatile, and most importantly, the partition panels 600 are easy and simple to install and dismantle without using special tools or devices.

Referring to FIG. 5, there is shown the top view of the partition panel 600 of the present invention. In the drawing, there is shown both protruded edges 62 at the side of the panel 600, and the panels 600 are arranged vertically to form a partition system. A plurality of screws 71 are used to mount the panels 600 to each other and hold one of the edge of opposite placement panel. A partition wall is formed with strength to hold all panels in-position.

FIG. 6 shows the front view of a first locking mechanism 80A, and FIG. 7 show the side elevation view of the first locking mechanism in accordance with the present invention. As shown in the figures, the two-hollow squares 76, 78 are specially designed to meet different requirements for the installation of conduits or the like. The structure provides flexibility for the mounting of conduits or the likes while the partition panels 600 still be able to install for a wall with concealing effects on such requirements.

FIG. 1 is a perspective view showing a first locking mechanism 80A being inserted into a second locking mechanism to ensure panels 600 are hold in-position. As shown, at least two partition panels 600 are placed side by side and in vertical, and the first locking mechanism 80A is first inserted into the gap holes 63, 65, 67 of the panels 600, and then the second interlocking mechanism 80 is inserted into the first interlocking mechanism 80A. The panel wall are thus mounted.

FIG. 1 is perspective view showing a completed wall locked by a locking mechanism 80 in accordance with the present invention. The lockable mechanism 80 is applied to allow variation on width of wall to accommodate the acoustic requirement of end users. This

application is useful to conceal protruding columns within the lettable space which creates pleasant shape of a particular section of a room or space area within the lettable space. In-fills are required and the materials for such in-fill are flexible in order to provide satisfaction to meet end-users' requirement and also create different effect on acoustic performance. The partition panel wall is stable and of great strength.

Fig 2 shows a locking mechanisms being applied to allow variation on width of wall to accommodate the acoustic requirement of end users. This application is useful to conceal protruding columns within the lettable space which creates pleasant shape of a particular section of a room or space area within the lettable space.

In accordance with the present invention, the fabrication of partition wall from a plurality of partition panels 600 are as follows:

More than one partition panels 600 are arranged in vertical, and an aluminium extruded bracket 80a as the first locking mechanism is affixed at the gap holes 63, 65, 67. One or more than one holding rods as the second interlocking mechanism are inserted into the first interlocking mechanism so that the plurality of the partition panels 600 are being held together. In the present preferred embodiment, only two panels are used for illustration purpose.

From one side of the wall:

In accordance with the preferred embodiment, the panel 600 is provided with two edges 62, as shown in FIG. 1, protruded from the back surface of the panel 600 at the edge thereof, and a channel 66 is being formed between the two protruded edges 62. Both the panels 600 are affixed with a first locking mechanism 80A which for instance a bracket, to form into a partition wall. The panels 600 must align with the first locking mechanism 80A such that the second locking mechanism 80 (for instance the rod) can be inserted thereto for both sets of panels 600 to form the wall.

The wall:

Aligning the first locking mechanism 80 from both sides of the wall, a channel 66 is provided to insert the second locking mechanism 80 to hold all panels 600 in place. The arrangement of a second sets of partition panels 600 in such a way that one of the protruded edges 62 of the first set is located within the channel 66 of the second sets. The second locking mechanism is employed to hold all panels in place and a wall is thus formed.

In accordance with the preferred embodiment of the present invention, the partition panels 600 being formed as a partition wall are suitable to be used as internal walls within all building types such as residential, commercial and industrial with high quality finishing and high acoustic and thermal insulation performance depending on end-users' preference and requirement.

The installation of light-weight panel walls does not require skilled workers; hence, this not only reduce manpower costs but also increases efficiency in construction process. In addition, no wet trade nor plastering for finishing is required during installation which is time-saving and therein, translated as cost saving from material requirement; for instance, using polyurethane infill which can be easily removed by solvent and hence, these panel walls are largely reusable.

Due to the application of the first and the second locking mechanism 80A, 80, which is a bracket and a metallic rod respectively, only very minimal damage may be occurred in the course of dismantling the partition panels walls of the present invention, which means that such panels are reusable and hence, creating an eco-friendly perspective.

The embodiments shown and described above are exemplary. It is not claimed that all of the details, parts, elements, or steps described and shown were invented herein. Even though numerous characteristics and advantages of the present inventions have been described in the drawings and accompanying text, the description is illustrative only, and changes may be made in the detail, especially in matters of shape, size, and arrangement of the parts within the principles of the inventions to the full extent indicated by the broad meaning of the terms of the attached claims.

WHAT IS CLAIMED IS:

1. A partition panel wall substantially rectangular for office plan or residential rooms, and the like comprising

a plurality of panels having protruded edge formed along the edges of the longer side of each panel defining a channel therebetween adapted to house cables and the like therein, and having a plurality of gap holes spaced apart along the lateral edge of each panel;

a first locking mechanism being an etruded bracket mounted at the gap holes, wherein the gap holes on the lateral edge of each panel are configured to detachably detain the first locking mechanism on the panel; and

a second locking mechanism inserted into the first locking mechanism, wherein the first locking mechanism is configured to facilitate engagement with the second locking mechanism so that the panels are alignedly mounted and securedly formed as a partition wall.

2. The partition panel wall as set forth in Claim 1, wherein the first locking mechanism and the second locking mechanism lock the panels at the same plan to form a partition wall.

3. The partition panel wall as set forth in Claim 1, wherein the first locking mechanism is secured engaged with the second locking mechanism.

4. The partition panel as set forth in Claim 2, wherein the first and second locking mechanism are configured to secure more than one panels in place.

5. The partition panel wall as set forth in claim 1, wherein the channel formed between the two protruded edges is adapted to retain cables and conduits and the likes.

6. A lateral standing partition panel for a room and the like, comprising

a plurality of panels formed into lateral partition wall having a first locking mechanism disposed at gap holes formed on the panel, and a second locking mechanism disposed at the first locking mechanism such that each panel wall is securedly mounted vertically, wherein the gap holes on the lateral edge of each panel are configured to detachably detain the first locking mechanism on the panel; and; and

a channel formed between two protruded edges at the edge of the panel to retain utility cables or wires and the like.

7. The partition panel as set forth in Claim 1, wherein the plurality of panels are securedly together using the first locking mechanism and second locking mechanism to form partition wall for residential, commercial and industrial building.

8. The partition panel as set forth in Claim 1, wherein a plurality of screw holes are formed on the surface of the panel and are in alignment with the gap holes formed at the lateral side of the panel.

9. The partition panel as set forth in Claim 1, wherein the gap holes are used to affix first and second locking mechanism.

10. The partition panel as set forth in Claim 1, wherein the second interlocking mechanism is holding rods which are to be inserted into the second interlocking mechanism to hold panels together and thus, forming a wall.