Title: WALL SYSTEM SUITABLE FOR INTER-TENANCY INSTALLATION

Abstract: A wall system including an upper track member secured to an upper support surface and extending at least partly along the length of the wall system. The wall system also includes a lower track member secured to a lower support surface and extending at least partly along the length of the wall system. Optionally, the wall system includes at least one separator extending vertically between the first and second shaft liners. The upper and lower track members have two opposed spaced apart flanges extending from a web and characterised in that at least one of the upper and lower track members has at least one foldable flange relative to the web.
WALL SYSTEM SUITABLE FOR INTER-TENANCY INSTALLATION

TECHNICAL FIELD

The present invention relates to a wall system and in particular, a wall system for use in inter-tenancy installations. More specifically, the present invention relates to a wall system that includes shaft liner material that extends between a length of track secured to an upper support surface and a length of track secured to a lower support surface of the wall system.

BACKGROUND ART

Wall systems that are installed in inter-tenancy installations are required to provide both sound insulation between adjoining properties and also provide a so called “fire-wall” that protects adjoining properties from fire. By inter-tenancy it is understood to mean a wall that separates adjoining properties in an apartment block or the like.

Conventional inter-tenancy wall systems include shaft liner material that extends between upper and lower tracks secured to respective support surfaces. Each track, typically made of sheet metal, includes two opposed spaced apart flanges extending from a web member.

A disadvantage of such conventional wall systems is that it is difficult for installers to install the shaft liner material between the upper and lower tracks. This difficulty is two-fold. Firstly, the shaft liner material in panel form is heavy, and secondly whilst a first end of the shaft liner material can be inserted into the upper track, the subsequent insertion into the lower track is a lot more difficult and labour intensive.

One such attempt to overcome these problems is described in Australian Patent Application No. 2003200746 in the name of Boral Australian Gypsum Limited. The wall system described in this document replaces the lower track with a length of angle secured to a lower support surface such that a web of the length of angle extends vertically from
the lower support surface. The length of angle allows a person installing the wall system to insert an upper edge of the shaft liner materials into the upper track and then simply rest the lower edge of the shaft liner materials on the length of angle. Although improved over conventional wall systems, the installation of the shaft liner material is still relatively time consuming in the wall system described in Application No. 2003200746.

One problem with both conventional wall systems and the wall system described in Application No. 2003200746 is that it is difficult to ensure that the wall systems that are installed meet safety and regulatory standards. Where the wall systems are to be installed as inter-tenancy wall systems, they must meet fire safety standards. The wall systems must be fire-rated and to achieve this, a fire-seal material is installed in the wall system. The fire-seal material is usually a foamed sealing rod that is installed between the upper frame of the wall system and the upper support structure. When a safety inspector conducts an inspection of the wall system during construction of a building, they cannot visually inspect the wall system to see if fire-seal material has been installed because the shaft liner material installed in the upper track impairs their view. Thus, they have to rely on the honesty of the installers as to whether fire-seal material has been installed or not.

Therefore, it would be advantageous to provide an improved wall system including shaft liner material that extends between a length of track secured to an upper support surface and a length of track secured to a lower support surface of the wall system. This would overcome at least some of the disadvantages of previously known approaches in this field, or would provide a useful alternative.

25 DISCLOSURE OF INVENTION

According to a first aspect of the present invention there is provided a wall system including an upper track member secured to an upper support surface and extending at least partly along the length of said wall system; a lower track member secured to a lower support surface and extending at least partly along the length of said wall system; at least one shaft liner, extending between said upper and lower track members such that the upper edges of said shaft liner is located within said upper track member and the lower edges of
said liner is located within said lower track member; optionally at least one separator extending vertically between the first and second shaft liners; wherein said upper and lower track members have two opposed spaced apart flanges extending from a web and characterised in that at least one of said upper and lower track members has at least one foldable flange relative to said web.

Preferably, both of said upper and lower track members have at least one foldable flange with respect to said web. Even more preferably each one of said upper and lower track members has a single foldable flange with respect to said web. In one preferred embodiment that each one of said upper and lower track members has a line of structural weakness running at least partly the length thereof, to allow said flange to be folded with respect to said web. It is envisaged that said line of structural weakness is formed by one or more of laser etching, laser cutting, perforations or scoring.

Preferably, said separator includes an I-section having two opposing flanges and a central web extending between the opposing flanges. The separator includes an I-section having a central web extending between two opposing first and second flanges; a C-section having first and second opposing flanges and a web member extending therebetween, wherein said second flange of said C-section is connected to said first flange of said I-section; wherein said web of said C-section extends away from said first flange of said I-section towards the first flange of said C-section; and the web of said C-section is parallel to said central web of said I-section; and wherein said first and second flanges of said I-section are parallel to each other and to said first and second flanges of said C-section.

Preferably, said second flange of said C-section is integrally formed with said first flange of said I-section. In the preferred embodiment, said separator is extruded metal and said separator has a constant cross-section when viewed in end view.

Preferably, said C-section optionally includes a strengthening member that extends from the first flange of said C-section towards the first flange of said I-section, thereby providing strength and rigidity to said separator when a linerboard is attached thereto. It is the first flange of said C-section that is adapted to have linerboards fastened thereto.
Preferably, a vertical edge of said first shaft liner is located between the flanges of the I-section on one side of the central web and a vertical edge of said second shaft liner is located between the flanges of the I-section on the opposing side of the central web.

Preferably, a vertical edge of said first shaft liner means is located between the flanges of the I-section on one side of the central web and a vertical edge of said second shaft liner means is located between the flanges of the I-section on the opposing side of the central web.

According to another aspect of the present invention, at least one of said upper and lower track means further include a plurality of lugs disposed along the length of the non-foldable flange, said lugs being adapted to engage with said separators.

Preferably, a length of fire-seal material is provided along the length of the wall system between the upper edges of the first and second shaft liners and the upper track member. In the preferred embodiment, said fire-seal material is a foamed sealing rod.

According to one aspect of the invention, a first shaft liner extends between a first wall surface and said separator and a second shaft liner being a final shaft liner extends between said separator and a second wall surface.

According to another aspect of the present invention a first shaft liner extends between a first wall surface and said separator and a second shaft liner extends from the separator towards a second wall surface and wherein at least one additional separator and associated additional shaft liners are disposed between said second shaft liner and said second wall surface.

Preferably, a vertical edge of said first shaft liner is received by a first vertical track member secured to said first wall surface and a vertical edge of said final shaft liner is received by a second vertical track member secured to said second wall surface.
It is preferred that said first and second vertical track members are the same as said upper and lower track members.

Preferably, a fire-seal material is provided and extends between the vertical edge of the first shaft liner and the first vertical track member and a further fire-seal material is provided and extends between the vertical edge of the final shaft liner and the second vertical track member.

It is preferred that said shaft liner includes at least a pair of shaft liner panels and that the panels are fire rated plasterboard. It is even more preferred that facing material is secured to one or both sides of said wall system. The facing material is a linerboard and is preferably a plaster linerboard.

Preferably, a fire and/or sound resistant material is disposed between said facing material and said wall system on one or both sides of said wall system.

In one embodiment, said upper and lower track members include a plurality of apertures to allow a finish to be applied to said wall system.

According to another aspect of the present invention, there is provided a track member for use in a wall system, said track member adapted to be secured to a support surface and receive therein at least one shaft liner, said track member includes opposed, spaced apart first and second flanges extending from a web characterised in that at least one of said first or second flanges is foldable with respect to said web.

Preferably, said track member adapted to be secured to a support surface and receive therein at least one shaft liner, said track member includes opposed, spaced apart first and second flanges extending from a web characterised in that at least one of said first or second flanges has a line of structural weakness running the length thereof.

Preferably, said line of structural weakness is formed by one or more of laser etching, laser cutting, perforations or scoring.
It is preferred that said first and second flanges extend the same distance from said web. However, in another embodiment, said first and second flanges extend to different distances from said web.

In another aspect the present invention relates to a method of installing a wall system including the steps of securing an upper track member to an upper support surface along the length of said wall system and a lower track member to a lower support surface at least partially along the length of said wall system, wherein each of said upper and lower track members have two opposed spaced apart flanges extending from a web and at least one of said upper and lower track members includes at least one foldable flange with respect to said web; installing at least first and second shaft liners into said upper and lower track members such that upper edges of said first and second track means are located within said upper track and lower edges of said first and second shaft liners are located within said lower track member; and optionally installing at least one separator that extends vertically between said first and second shaft liner means and wherein said separator includes an I-section having two opposing flanges and a central web extending between the opposing flanges, such that a vertical edge of said first shaft liner is located between the flanges of the I-section on one side of the central web and a vertical edge of said second shaft liner is located between the flanges of the I-section on the opposing side of the central web.

Preferably, the method further includes the steps of installing a length of fire-seal material along the length of said wall system between the upper edges of said first and second liners and said upper track member, installing a length of fire-seal material along the length of said wall system between the lower edges of said first and second liners and said lower track member, installing a length of fire-seal material along the height of said wall system between the first and second liners and the first and second vertical track members.

Even more preferably, after said fire-seal is installed, said foldable flange of each of the upper and lower track members is folded relative to the central web of each of the upper and lower track members, such that a surface of said foldable flange is in contact
with a surface of said shaft liner, thereby securing said shaft liner means within said upper and lower track members.

It is preferred that the fire-seal material is a foamed sealing rod.

In another aspect, the present invention relates to a separator for a wall system including an I-section having a central web extending between two opposing first and second flanges and a C-section having two first and second opposing flanges and a web member extending therebetween; wherein said second flange of said C-section is connected to said first flange of said I-section and said web of said C-section extends away from said first flange of said I-section towards said first flange of said C-section; and wherein said web of said C-section is parallel to said central web of said I-section and said first and second flanges of said I-section are parallel to each other and to said first and second flanges of said C-section.

BRIEF DESCRIPTION OF DRAWINGS

Embodiments of the present invention will now be described in more detail with reference to the accompanying drawings in which:

FIG 1a depicts a vertical section of a first prior art wall system;

FIG 1b depicts a vertical section of a second prior art wall system;

FIG 2 depicts a perspective view of a track member for a wall system in accordance with a first embodiment of the present invention.

FIG 3 depicts a vertical section of a wall system having track members of the embodiment shown in FIG 2.

FIG 4 depicts a horizontal section of the wall system shown in FIG 3.
FIG 5 depicts a horizontal section of a wall system in accordance with a second aspect of the present invention having track members of the embodiment shown in FIG 2.

FIG 6 depicts a perspective view of a track member for a wall system in accordance with a second embodiment of the present invention.

FIG 7 depicts horizontal section of a separating member in accordance with a third embodiment of the present invention.

FIG 8 depicts a perspective view of the separating member shown in FIG 6.

BEST MODE FOR CARRYING OUT THE INVENTION

Figs 1a and 1b depict various prior art wall systems of a similar type to the wall system of the present invention. In Fig 1a, the prior art wall system has upper and a lower "J-shaped" track members 33a, and 33b. Fig 1b shows another type of similar prior art wall system having two angles in place of the upper and lower "J-shaped" tracks, upper angle 43a and lower angle 43b.

The wall system 1 of the present invention as described with reference to Figs 2 to 4 has replaced the prior art "J-shaped" track members and/or angles with track members having foldable flanges, thereby simplifying the construction process of the wall system 1 of the present invention compared to prior art wall systems.

As depicted in Fig 2, a track member 3 has two opposed spaced apart flanges 2, 4 extending from a web member 5. A line of weakness 9 exists at or near the junction between flange 2 and web member 5, thereby allowing flange 2 to be moved or "folded" relative to web member 5. In this embodiment, the line of weakness 9 is provided by a plurality of elongate apertures that have been formed by laser cutting or etching.
As depicted in Figs 3 and 5, the wall system 1 of the present invention includes an upper track member 3a that is secured to an upper support surface 7 and extends substantially along the longitudinal length of the wall system 1. A lower track member 3b is secured to a lower support surface 8 and extends substantially along the longitudinal length of the wall system 1. The upper and lower track members 3a, 3b are secured to the upper and lower support surfaces 7 and 8 by way of conventional fasteners such as screws or bolts. For example, upper and lower track members 3a, 3b may be fastened at 600mm maximum centres with expanding masonry anchors, such as those marketed under the trade name, Dynabolts®.

Best shown in Fig 3, a first shaft liner means 6, including a pair of shaft liner panels 6a and 6b extends between the upper track member 3a and the lower track member 3b. In this embodiment, the pair of shaft liner panels 6a, 6b are each 25mm shaft liner panels. The use of separate 25mm thick x 600mm shaft liner panels reduces the loads that installers of these wall systems are required to lift at one time. Also, the use of a pair of 25mm shaft liner panels introduces sufficient mass into the wall system 1 to benefit its acoustic insulating properties.

A fire-seal material, preferably being a foamed sealing rod 10 such as a continuous 22mm IBS rod, is inserted between the shaft liner panels 6a, 6b and the upper track member 3a to provide a fire and acoustic seal whilst allowing for some deflection. Fire and/or sound grade sealant may also be provided at upper and lower junctions where a linerboard, such as a plaster linerboard 11 is secured to the shaft liner panels 6a, 6b. The plaster linerboard 11 is preferably a fire rated linerboard such as CSR Gyprock® Fyrcheck™ and may be secured to the shaft liner panels 6a, 6b by means of conventional fasteners such as screws or the like. The use of fire rated plaster linerboard 11 provides the wall system 1 of the present invention with good thermal insulation during the event of a fire.

As best shown in Fig 4, a first shaft liner means 6, including a pair of shaft liner panels 6a and 6b extends between the first vertical track member 15 and the second vertical track member 17. In this embodiment, the pair of shaft liner panels 6a, 6b are each
25mm shaft liner panels. The use of separate 25mm thick x 600mm shaft liner panels reduces the loads that installers of these wall systems are required to lift at one time. Also, the use of a pair of 25mm shaft liner panels introduces sufficient mass into the wall system 1 to benefit its acoustic insulating properties.

A fire-seal material, preferably being a foamed sealing rod 10 such as a continuous 22mm IBS rod, is inserted between the shaft liner panels 6a, 6b and the first vertical track member 15 to provide a fire and acoustic seal whilst allowing for some deflection. Fire and/or sound grade sealant may also be provided at upper and lower junctions where a linerboard, such as a plaster linerboard 11 is secured to the shaft liner panels 6a, 6b. The plaster linerboard 11 is preferably a fire rated linerboard such as CSR Gyprock® Fyrchek™ and may be secured to the shaft liner panels 6a, 6b by means of conventional fasteners such as screws or the like. The use of fire rated plaster linerboard 11 provides the wall system 1 of the present invention with good thermal insulation during the event of a fire.

As shown in Fig 5, a separating member 12 extends between the first vertical track member 15 and the second vertical track member 17 and separates the shaft liner means 6 from further shaft liner means in the wall system 1. The separating member 12 includes an I-section that has two opposing flanges and a central web member that extends between the two flanges. The separating member 12 is adapted to receive a vertical edge of a first shaft liner means on one side of the central web and a vertical edge of a second shaft liner means on the opposing side of the central web.

The wall system 1 extends between a first wall surface 13 and a second wall surface 14. A first vertical track member 15 receives a vertical edge of first shaft liner means 6, constituted by a pair of shaft liner panels 6a, 6b therein. The opposing vertical edge of the first shaft liner means 6, constituted by a pair of shaft liner panels 6a, 6b is received in a separating member 12. The first shaft liner means 6 is located within the separating member 12 between the opposed flanges on one side of the central web. The ends of the first shaft liner means 6 are secured to the vertical track member 15 and the separating member 12 by way of conventional fasteners, such as screws. The fasteners also extend through a plaster linerboard panel 11 that is affixed to the wall system 1.
A second shaft liner means 16, constituted by a pair of shaft liner panels 16a, 16b extends from between the opposed flanges on the opposing side of the central web of the separating member 12. In the embodiment shown in Fig 4 the shaft liner panels 16a, 16b are the final shaft liner means in the wall system 1 and therefore extend to a second wall surface 14. The opposing vertical edge of shaft liner panels 16a, 16b to the vertical edge secured in the separating member 12 are received in a second vertical track member 17. The first and second vertical track members 15, 17 are the same as upper and lower track members 3a, 3b and are manufactured of extruded aluminium.

A sealant, such as a fire/sound grade sealant is applied in the gap between the plaster linerboard 11 and the first and second wall surfaces 13, 14 to improve acoustic and/or fire resistant properties of the wall system 1. Also, a foamed sealing rod 10 is provided between the shaft liner means 16 and the first vertical track member and also improves the acoustic and/or fire resistant properties of the wall. An additional

The method for constructing the wall system 1 of the present invention will now be discussed in further detail with reference to Figs 3 to 5. This discussion of the method of construction of the wall system of the present invention will further illustrate the advantages provided by the present invention.

Installing the wall system 1 according to the present invention is relatively straightforward and may be carried out by a plastering contractor or the like. Firstly, the upper track member 3a is installed at the head of a wall, at a first wall surface 13, by fastening at maximum 600mm centres. The lower track member 3b is then installed at the base of the wall, again fastening at maximum 600mm centres. The first vertical track 15 is then installed where the wall commences fastening at maximum 600mm centres.

An acoustic and/or fire resistant sealant is then applied where the track members abut wall surfaces. Alternatively, acoustic and/or fire resistant insulation batts may be installed between the tracks members and their respective abutting surfaces.
A first shaft liner means 6, constituted by a pair of shaft liner panels 6a, 6b and the separating members 12 are then cut to length, if necessary. The first shaft liner panel 6a is then fitted into the upper track member 3a, the lower track member 3b and the first vertical track member 15.

A 22mm diameter IBS rod 10 is then pushed into the gap above first shaft liner panel 6a and the upper track member 3a. An additional 22mm diameter IBS rod 10 is then pushed into the gap between first shaft liner panel 6a and the first vertical track member 15. This ensures that there are no gaps between the shaft liner panel 6a and the upper track member 3a and the first vertical track member 15. The second shaft liner panel 6b is then fitted into the upper track member 3a, lower track member 3b and first vertical track member 15 and flush against the first shaft liner panel 6a.

Optionally, once the first shaft liner means 6 is fitted into the upper track member 3a, lower track member 3b and first vertical track member 15, a separating member 12 including an I-section having two opposed spaced apart flanges and a central web member is fitted into the upper and lower track members 3a, 3b and against the vertical edge of first shaft liner means 6, so that the vertical edges of the first and second shaft liner panels 6a and 6b fit snugly in between the flanges of the separating member and hard against its central web.

Optionally, additional shaft liner means and separating members 12 are then fitted into the wall system 1 until the wall system spans across to a second wall surface 14. Preferably, when there is a gap of approximately 600mm between the vertical edge of the shaft liner means 6 and the second wall surface 14, a second vertical track member 17 is secured to the second wall surface 14.

A shaft liner panel 16a is then cut to fit snugly between the central web member of the final separating member 12, the second vertical track member 17, which is secured to the second wall surface 14, and the upper and lower track members 3a, 3b. Again, a 22mm IBS rod 10 is pushed into the gap above the shaft liner panel 16a and the upper track member 3a, thus ensuring that there are no gaps. A shaft liner panel 16b is then cut to the
same dimensions as shaft liner panel 16a and is then fitted into the upper track member 3a, lower track member 3b and second vertical track member 17 and flush against the first shaft liner panel 16a.

The final step in the construction of the wall system of the present invention is to fold the foldable flange 2, relative to the web member 5 of the upper track member 3a, the lower track member 3b and the first and second vertical track members 15, 17. After the flange 2 of each of the track members has been folded, a surface of the foldable flange 2 is in contact with a surface of the shaft liner means. This serves to further secure the shaft liner means within the wall system 1 of the present invention. The step of folding the flanges 2 of each of the track members completes the construction of the wall system 1 according to a preferred embodiment of the invention.

The wall may be finalised by fastening linerboards to the external surfaces of the shaft liner panels. Various embodiments of the wall system of the present invention include situations where a sheet of 13mm plasterboard is secured to the wall system 1, where a 13mm fire rated plasterboard is secured to the wall system 1, where a 75mm glass wool blanket or batt or a 75mm polyester blanket or batt is provided on one or both sides of the wall system to provide for improved acoustic and/or fire insulation. Of course, any suitable external finish may be applied to the wall system 1 of the present invention.

Whilst the embodiment shown in Fig 5 shows only first and second shaft liner means 6 and 16, it should be understood that whilst the second shaft liner means 16 may be the final shaft liner means in the wall system 1 and may therefore extend to the second wall surface 14, in other embodiments not shown in the drawings, the second shaft liner means 16 may extend to additional separating members 12i, 12ii, 12iii, 12iv... and so on.

In a second embodiment shown in Fig 6, the track member 3 may be used in the construction of external wall systems. In this second embodiment, the track member 3 has similar features to the track member of the first embodiment. Accordingly, similar features will be marked with the same reference numerals.
Flange 2 includes a plurality of apertures 20 thereon. The plurality of apertures 20 allow finishes to be applied to the external wall system, such as cement rendering or the like. In the first embodiment shown in Figs 2 to 5, where the wall system of the present invention is to be installed as an inter-tenancy wall system, there are fire regulations and safety standards that require that a fire seal material, preferably a 22mm IBS rod, be installed in the wall system. However, in the second embodiment, shown in Fig 6, where the wall system is an external wall, there are no fire regulations that require a fire seal material to be installed. Thus, where the wall system is an external wall, a fire seal material optionally may or may not be installed.

Figure 7 shows a separating member 12 in accordance with a third embodiment of the present invention. The separating member 12 comprises two main sections 12a and 12b. Section 12a includes an I-shaped section having two opposed spaced apart first and second flanges 30, 32 and a central web member 34. Section 12b is integrally formed with the first flange 30 of section 12a and includes a first flange 22, a second flange 24, a web 28 and optionally a strengthening member 26.

The web 28 extends away from the first flange 30 of the I-section 12a and the first flange 22 of 12b towards the second flange 24 of section 12b. In this way, section 12b is substantially C-shaped. A linerboard can be fastened to the second flange 24 of the C-section 12b. The strengthening member 26 optionally extends from the second flange 24 of the C-section 12b towards the first flange 30 of the I-section 12a and the first flange 22 of 12b and is located on the second flange 24 of the C-section 12b, at a point furthest away from the web 28. The strengthening member 26 increases the strength and rigidity of the separating member 12 when linerboards 11 are attached thereto.

Various embodiments of the wall system of the present invention include situations where a sheet of 13mm plasterboard is secured to the C-shaped 12b section, where a 13mm fire rated plasterboard is secured to the C-shaped 12b section, where a 75mm glass wool blanket or batt or a 75mm polyester blanket or batt is provided on one or both sides of the wall system to provide for improved acoustic and/or fire insulation. The cavity that is
formed by the C-section between the plasterboard and the I-section can also be used for the installation of services such as electrical, plumbing and the like. Of course, any suitable external finish may be applied to the C-shaped 12b section of the present invention.

Fig 8 shows how the separating member 12 in accordance with the third embodiment of the present invention, having sections 12a and 12b, interconnects with the lower foldable track member 3b. Figure 8 shows a lower track member 3b, however, the same connection would occur between the spacing member 12 and the upper track member 3a. The I-section 12a of the spacing member 12 is fitted within the track member 3a, leaving the C-section 12b outside of the track member 3b.

When the separating members depicted in Figs 7 and 8 are used in a wall system, the first shaft liner means 6 is fitted into the upper track member 3a, lower track member 3b and first vertical track member 15, a separating member is fitted into the upper and lower track members 3a, 3b and against the vertical edge of first shaft liner means 6, so that the vertical edges of the first and second shaft liner panels 6a and 6b fit snugly in between the flanges of the I-shaped 12a section of the separating member and hard against its central web. The C-shaped 12b section lies outside of the upper and lower track members 3a, 3b and is adapted to have linerboards 11, or any suitable wall finishing surface, fastened thereto.

The separating member as shown in Figs 7 and 8 is preferably manufactured from an extruded metal, such as steel or the like. However, in other embodiments, a first separating member that only includes an I-section having two opposing flanges and a central web member extending between the two flanges can be connected to a second separating member that only includes a C-section having two opposing flanges and a web member extending between the two flanges. These two separating members can be connected to each other by adhesive, welding, fastening means or the like.

Whilst the embodiments shown in Figs 2 to 8 show the shaft liner means 6 including first and second shaft liner panels 6a, 6b, it should be understood that in other embodiments not shown in the drawings, the shaft liner means may include any number of
shaft liner panels, including only a single shaft liner panel. It should also be understood that whilst in the embodiment shown in Figures 2 to 8 the shaft liner means includes a pair of shaft liner plasterboard panels, in other embodiments not shown in the drawings, the shaft liner means may include shaft liner panels made from materials other than plaster linerboard, such as masonry, wood, plastic, glass or the like.

Whilst the embodiments shown in Figs 2 to 6 show track members 2, 3, 15 and 17 as being substantially "J-shaped", it should be understood that in other embodiments not shown in the drawings, the track members may also be "U-Shaped" or "C-Shaped". Indeed, any combination of "J-Shaped" and "U-Shaped" track members for the upper, lower and vertical track members may be utilised within the scope of this invention.

Whilst the embodiment of the track 3 shown in Figs 2 and 6 depicts the line of weakness 9 being provided by a plurality of elongate apertures that have been formed by laser cutting or etching, in other embodiments not shown in the drawings, any other suitable way of forming the line of weakness may be utilised such as scoring, perforations or the like.

Whilst the embodiments shown in Figs 3 to 5 show a continuous 22mm diameter IBS rod fitted into the gap between the shaft liner means 6, 16 and the first vertical track member 15 and the upper track member 3a, it should be understood that in other embodiments, not shown in the drawings, additional IBS rods may be installed in the gaps between the shaft liner means 6, 16 and the second vertical track means 17 and/or the lower track member 3b.

In another embodiment, not shown in the drawings, the upper and lower track members 3a and 3b further include a plurality of lugs disposed along the length of the non-foldable flange. Each of the lugs assists the upper and lower track members 3a and 3b to engage with the separators 12.
INDUSTRIAL APPLICABILITY

The present invention can be used in a wall system that includes a shaft liner material extending between a length of track secured to an upper support surface and a length of track secured to a lower support surface of the wall system. The present invention is particularly suited for use in inter-tenancy installations.

The invention has been described by way of non-limiting examples only and many modifications and variations may be made thereto without departing from the spirit and scope of the invention described. The essence of the invention is the line of weakness that allows the flanges to be moved or “folded”.

The term “comprising” (and its grammatical variations) as used herein is used in the inclusive sense of “having” or “including” and not in the exclusive sense of “consisting only of”.
CLAIMS

1. A wall system including:

   an upper track member secured to an upper support surface and extending at least partly along the length of said wall system;

   a lower track member secured to a lower support surface and extending at least partly along the length of said wall system;

   at least one shaft liner, extending between said upper and lower track members such that the upper edges of said shaft liner is located within said upper track member and the lower edges of said liner is located within said lower track member;

   optionally at least one separator extending vertically between the first and second shaft liners;

   wherein said upper and lower track members have two opposed spaced apart flanges extending from a web and characterised in that at least one of said upper and lower track members has at least one foldable flange relative to said web.

2. The wall system of claim 1 wherein both of said upper and lower track members have at least one foldable flange with respect to said web.

3. The wall system of claim 1 or 2 wherein each one of said upper and lower track members has a single foldable flange with respect to said web.

4. The wall system of claim 3 wherein each one of said upper and lower track members has a line of structural weakness running at least partly the length thereof, to allow said flange to be folded with respect to said web.
5. The wall system of claim 4 wherein said line of structural weakness is formed by one or more of laser etching, laser cutting, perforations or scoring.

6. The wall system of claim 1 wherein said separator includes an I-section having two opposing flanges and a central web extending between the opposing flanges.

7. The wall system of claim 1 wherein said separator includes:

   an I-section having a central web extending between two opposing first and second flanges;

   a C-section having first and second opposing flanges and a web member extending therebetween, wherein said second flange of said C-section is connected to said first flange of said I-section;

   wherein said web of said C-section extends away from said first flange of said I-section towards the first flange of said C-section; and the web of said C-section is parallel to said central web of said I-section; and

   wherein said first and second flanges of said I-section are parallel to each other and to said first and second flanges of said C-section.

8. The wall system of claim 7 wherein said second flange of said C-section is integrally formed with said first flange of said I-section.

9. The wall system of claim 7 or 8 wherein said separator is extruded metal and said separator has a constant cross-section when viewed in end view.

10. The wall system of claim 7 wherein said C-section optionally includes a strengthening member that extends from the first flange of said C-section towards the first flange of
said I-section, thereby providing strength and rigidity to said separator when a linerboard is attached thereto.

11. The wall system of claim 7 wherein the first flange of said C-section is adapted to have linerboards fastened thereto.

12. The wall system of claim 6 wherein a vertical edge of said first shaft liner is located between the flanges of the I-section on one side of the central web and a vertical edge of said second shaft liner is located between the flanges of the I-section on the opposing side of the central web.

13. The wall system of claim 7 wherein a vertical edge of said first shaft liner means is located between the flanges of the I-section on one side of the central web and a vertical edge of said second shaft liner means is located between the flanges of the I-section on the opposing side of the central web.

14. The wall system of claim 1 wherein at least one of said upper and lower track means further include a plurality of lugs disposed along the length of the non-foldable flange, said lugs being adapted to engage with said separators.

15. The wall system of claim 1 wherein a length of fire-seal material is provided along the length of the wall system between the upper edges of the first and second shaft liners and the upper track member.

16. The wall system of claim 15 wherein said fire-seal material is a foamed sealing rod.

17. The wall system of claim 1 wherein a first shaft liner extends between a first wall surface and said separator and a second shaft liner being a final shaft liner extends between said separator and a second wall surface.

18. The wall system of claim 1 wherein a first shaft liner extends between a first wall surface and said separator and a second shaft liner extends from the separator towards
a second wall surface and wherein at least one additional separator and associated additional shaft liners are disposed between said second shaft liner and said second wall surface.

19. The wall system of claim 17 or 18 wherein a vertical edge of said first shaft liner is received by a first vertical track member secured to said first wall surface and a vertical edge of said final shaft liner is received by a second vertical track member secured to said second wall surface.

20. The wall system of claim 19 wherein said first and second vertical track members are the same as said upper and lower track members.

21. The wall system of claim 19 wherein a fire-seal material is provided and extends between the vertical edge of the first shaft liner and the first vertical track member and a further fire-seal material is provided and extends between the vertical edge of the final shaft liner and the second vertical track member.

22. The wall system of claim 1 wherein said shaft liner includes at least a pair of shaft liner panels.

23. The wall system of claim 22 wherein said shaft liner panels are fire rated plasterboard.

24. The wall system of any one of the preceding claims wherein facing material is secured to one or both sides of said wall system.

25. The wall system of claim 24 wherein said facing material is a linerboard.

26. The wall system of claim 25 wherein said linerboard is a plaster linerboard.

27. The wall system of claim 23 wherein a fire and/or sound resistant material is disposed between said facing material and said wall system on one or both sides of said wall system.
28. The wall system of claim 1 wherein said upper and lower track members include a plurality of apertures to allow a finish to be applied to said wall system.

29. A track member for use in a wall system, said track member adapted to be secured to a support surface and receive therein at least one shaft liner, said track member includes opposed, spaced apart first and second flanges extending from a web characterised in that at least one of said first or second flanges is foldable with respect to said web.

30. A track member for use in a wall system, said track member adapted to be secured to a support surface and receive therein at least one shaft liner, said track member includes opposed, spaced apart first and second flanges extending from a web characterised in that at least one of said first or second flanges has a line of structural weakness running the length thereof.

31. The track member of claim 30 wherein said line of structural weakness is formed by one or more of laser etching, laser cutting, perforations or scoring.

32. The track member of claim 30 wherein said first and second flanges extend the same distance from said web.

33. The track member of claim 30 wherein said first and second flanges extend to different distances from said web.

34. A method of installing a wall system including the steps of:

   a) securing an upper track member to an upper support surface along the length of said wall system and a lower track member to a lower support surface at least partially along the length of said wall system, wherein each of said upper and lower track members have two opposed spaced apart flanges extending from a web and at least one of said upper and lower track members includes at least one foldable flange with respect to said web;
b) installing at least first and second shaft liners into said upper and lower track members such that upper edges of said first and second track means are located within said upper track and lower edges of said first and second shaft liners are located within said lower track member; and

c) optionally installing at least one separator that extends vertically between said first and second shaft liner means and wherein said separator includes an I-section having two opposing flanges and a central web extending between the opposing flanges, such that a vertical edge of said first shaft liner is located between the flanges of the I-section on one side of the central web and a vertical edge of said second shaft liner is located between the flanges of the I-section on the opposing side of the central web.

35. The method of claim 34 further including the steps of installing a length of fire-seal material along the length of said wall system between the upper edges of said first and second liners and said upper track member, installing a length of fire-seal material along the length of said wall system between the lower edges of said first and second liners and said lower track member, installing a length of fire-seal material along the height of said wall system between the first and second liners and the first and second vertical track members.

36. The method of claim 35 wherein after said fire-seal is installed, said foldable flange of each of the upper and lower track members is folded relative to the central web of each of the upper and lower track members, such that a surface of said foldable flange is in contact with a surface of said shaft liner, thereby securing said shaft liner means within said upper and lower track members.

37. The method of claim 35 wherein said fire-seal material is a foamed sealing rod.
38. A separator for a wall system including an I-section having a central web extending between two opposing first and second flanges and a C-section having two first and second opposing flanges and a web member extending therebetween; wherein said second flange of said C-section is connected to said first flange of said I-section and said web of said C-section extends away from said first flange of said I-section towards said first flange of said C-section; and wherein said web of said C-section is parallel to said central web of said I-section and said first and second flanges of said I-section are parallel to each other and to said first and second flanges of said C-section.
Fig 1a
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

Int. Cl.  
E04B 2/60 (2006.01)  
E04B 1/76 (2006.01)  
E04B 2/62 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
DWPI: IPC E04B 2/- and keywords; wall, screen, partition, track, channel, elongate, score, laser, etc.

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
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<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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* Further documents are listed in the continuation of Box C  
* See patent family annex

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Form PCT/ISA/210 (second sheet) (April 2007)
<table>
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<td>X</td>
<td>WO 2001/042579 A1 (GUERRASIO) 14 June 2001 See the drawings</td>
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</table>
**INTERNATIONAL SEARCH REPORT**

**Box No. II  Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. □ Claims Nos.:
   
   because they relate to subject matter not required to be searched by this Authority, namely:

2. □ Claims Nos.:
   
   because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. □ Claims Nos.:
   
   because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

**Box No. III  Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

See the additional sheet

1. □ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. □ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. □ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. □ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-37

**Remark on Protest**

□ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

□ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

□ No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet (2)) (April 2007)
Supplemental Box
(To be used when the space in any of Boxes I to VIII is not sufficient)

Continuation of Box No: III

This International Application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept.

In assessing whether there is more than one invention claimed, I have given consideration to those features which can be considered to potentially distinguish the claimed combination of features from the prior art. Where different claims have different distinguishing features they define different inventions.

This International Searching Authority has found that there are different inventions as follows:

- Claims 1 to 29 and 34 to 37 are directed to a track member. It is considered that one of the flanges being foldable comprises a first distinguishing feature.
- Claims 30 to 33 are directed to a track member. It is considered that the line of structural weakness in one of the flanges comprises a second distinguishing feature.
- Claim 38 is directed to a separator for a wall system. It is considered that the combination of I and C sections comprises a third distinguishing feature.

PCT Rule 13.2, first sentence, states that unity of invention is only fulfilled when there is a technical relationship among the claimed inventions involving one or more of the same or corresponding special technical features. PCT Rule 13.2, second sentence, defines a special technical feature as a feature which makes a contribution over the prior art.

Each of the abovementioned groups of claims has a different distinguishing feature and they do not share any feature which could satisfy the requirement for being a special technical feature. Because there is no common special technical feature it follows that there is no technical relationship between the identified inventions. Therefore the claims do not satisfy the requirement of unity of invention a priori.
This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

END OF ANNEX