

DESCRIPTION

TITLE OF THE INVENTION

BUILDING WALL

5

TECHNICAL FIELD

[0001]

The present disclosure relates to building walls.

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BACKGROUND OF THE INVENTION

[0002]

Conventionally, in a method of constructing a building wall, such as a partition wall or an indoor-facing wall of an exterior wall, by attaching face members for construction to studs (or intermediate posts), a multi-layer structure having two face members for construction, one being an overlay and the other being an underlay, is fastened to the studs erected at intervals in a horizontal direction.

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[0003]

More specifically, the building wall is constructed by a method of forming an underlay by fastening multiple underlay surface members to multiple studs with fastening members or the like, and forming an overlay by fastening multiple overlay face members to the underlay with either or both of staples and an adhesive. Here, there is also a building wall having three or more face members for construction in which, in addition to the underlay and the overlay, there is an intermediate layer that is interposed between the underlay and the overlay.

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[0004]

In a multi-story building, a staircase space is provided to connect each floor thereby enabling freedom of movement to upper and lower floors.

5 A building wall, such as a partition wall, and a staircase installed independent of the building wall constitute this staircase space. The term "staircase" includes a closed stringer staircase, an open stringer staircase, and the like, and these stringers included
10 in these staircases are installed where the front surface of the overlay of the building wall is. Here, in the present specification, "independent of the building wall" means that another member of the staircase or the like is a member separate from the
15 building wall, and encompasses both a form in which the other member is in contact with a surface of the building wall and a form in which the other member is separated from the surface of the building wall.

[0005]

20 For example, Patent Document 1 proposes a handrail-equipped indoor staircase that includes a closed stringer on a side of a wall panel. This handrail-equipped indoor staircase has a handrail supported by arms projecting from a wall surface of one
25 of the wall panels surrounding the right and left sides of the staircase, and the closed stringer attached to the wall panels facing the handrail is divided into two upper and lower stringer members with a tread and a riser as a boundary therebetween, and the tread and the
30 riser are inserted into insertion grooves between the upper stringer member and the lower stringer member.

Related Art Documents

Patent Document

[0006]

Patent document 1: Japanese Unexamined Patent

Application Publication No. H6 (1994)-10464

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SUMMARY OF THE INVENTION

Problems to be solved by the Invention

[0007]

For example, in a general method of
10 constructing a staircase space having a building wall
that is a multi-layer structure form, a staircase
connecting multiple floors (the first floor and the
second floor, for example) is constructed, studs
included in the building wall are installed on the side
15 of the staircase, an underlay is constructed by
installing underlay face members between the studs and
the staircase and fastening the underlay to the studs,
and an overlay is constructed by installing overlay
face members between the underlay and the staircase and
20 fastening the overlay to the underlay.

[0008]

In this construction method, when driving
in fastening members or the like to fasten the underlay
face members to the studs or when inserting staples or
25 the like to fasten the overlay face members to the
underlay face members, the stringer of the staircase
that has already been constructed hinders the driving-
in task, and thus there is a problem in that it is
difficult to fasten the underlay face member or the
30 overlay face member.

[0009]

In addition to such a staircase space, in
the construction of a building, various building

members, such as a floor beam, an inter-floor beam, and a foundation beam that have been already constructed (hereinafter, these and the stringer of a staircase are simply referred to as "building member") are used.

5 Therefore, there is a problem in that the fastening of the underlay face member or the overlay face member of the building wall is difficult to perform due to the presence of the building members that have been constructed in advance.

10 [0010]

According to the present disclosure, an objective is to provide a building wall constructed in the vicinity of one such building member constructed in advance, thereby facilitating the fastening of an
15 underlay face member and an overlay face member included in the building wall.

Means for Solving the Problem

[0011]

20 A building wall according to an aspect of the present disclosure includes:

an underlay connected to studs arranged at predetermined intervals, the underlay being formed of a plurality of underlay face members; and

25 an overlay connected to the underlay face members, the overlay being formed of a plurality of overlay face members, wherein

a building member independent of the building wall is installed where front surfaces of the
30 overlay face members are, the front surfaces being opposite to rear surfaces thereof facing the underlay face members,

the underlay face members are fastened to

the studs by first fixing members, and the overlay face members are fastened to the underlay face members by second fixing members, and

fastening positions of both the first fixing members and the second fixing members are set in a region avoiding the building member.

[0012]

A building wall according to another aspect of the present disclosure includes:

an underlay connected to studs arranged at predetermined intervals, the underlay being formed of a plurality of underlay face members;

an intermediate layer connected to the underlay face members, the intermediate layer being formed of a plurality of intermediate layer face members; and

an overlay connected to the intermediate layer face members, the overlay being formed of a plurality of overlay face members, wherein

a building member independent of the building wall is installed where front surfaces of the overlay face members are, the front surfaces being opposite to rear surfaces thereof facing the intermediate layer face members,

the underlay face members are fastened to the studs by first fixing members, the intermediate layer face members are fastened to the underlay face members by third fixing members, and the overlay face members are fastened to the intermediate layer face members by fourth fixing members, and

fastening positions of each of the first fixing members, the third fixing members, and the

fourth fixing members are set in a region avoiding the building member.

Effects of the Invention

5 [0013]

According to the present disclosure, regarding a building wall constructed in the vicinity of one such building member constructed in advance, an underlay face member and overlay face member included
10 in the building wall can be easily fastened.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014]

[FIG. 1] FIG. 1 is a front view illustrating a state in
15 which underlay face members are fastened to studs in a building wall according to an embodiment for forming a staircase space;

[FIG. 2] FIG. 2 is a front view illustrating a state in which intermediate layer face members are fastened to
20 the underlay face members in the building wall according to the embodiment for forming the staircase space;

[FIG. 3] FIG. 3 is a front view illustrating a state in which overlay face members are fastened to the intermediate layer face members in the building wall
25 according to the embodiment for forming the staircase space; and

[FIG. 4] FIG. 4 is a view taken along the line IV-IV of FIG. 3.

30 DETAILED DESCRIPTION OF THE INVENTION

[0015]

Hereinafter, an example of a building wall according to an embodiment is described with reference

to the accompanying drawings. In the specification and drawings, components that are substantially the same are denoted by the same reference numerals, and redundant description thereof is omitted in some cases.

5 [0016]

[Building Wall According to Embodiment]

An example of a building wall according to an embodiment is described with reference to FIGS. 1 to 4. Here, FIG. 1 is a front view illustrating a state in which underlay face members are fastened to studs in a building wall according to an embodiment for forming a staircase space. FIG. 2 is a front view illustrating a state in which intermediate layer face members are fastened to the underlay face members in the building wall according to the embodiment for forming the staircase space. FIG. 3 is a front view illustrating a state in which overlay face members are fastened to the intermediate layer face members in the building wall according to the embodiment for forming the staircase space, and FIG. 4 is a view taken along the line IV-IV of FIG. 3.

20 [0017]

The building wall in the illustrated example in the drawings is a partition wall having on one side of the studs, a three-layer structure having an underlay, an intermediate layer, and an overlay. Besides this structure, a partition wall having on one side thereof a single-layer structure having one face member; a partition wall having on one side thereof a multi-layer structure having two face members one being an overlay and the other being an underlay, or partition wall having on both sides thereof a single-layer structure having one face member, or a partition

wall having on both sides thereof a two-layer structure or a three-layer structure with two or three stacked face members, may be used. In a partition wall having a multi-layer structure having two face members one being
5 an overlay and the other being an underlay, the underlay face member is fastened to a stud by a first fixing member such as a fastening member, and the overlay face member is fastened to the underlay face member by a second fixing member such as staples. The
10 building wall may be an indoor-side wall of an exterior wall, instead of the partition wall illustrated in the drawings. Further, in the illustrated example, the building member, installed where the front surface of the building wall is, is a closed stringer included in
15 a staircase, but as described above, the term "building member" encompasses various building members, such as a floor beam, an inter-floor beam, and a foundation beam installed where the front surface of the building wall is.

20 [0018]

A partition wall 100 (an example of the building wall) illustrated in FIG. 3 is applied to a steel-framed building, a reinforced concrete (RC) building, a wooden building, or the like, and these
25 building include a factory, a warehouse, and the like, in addition to a typical detached house and a multiple dwelling complex, such as a condominium.

[0019]

The partition wall 100 has multiples studs
30 10, a lower runner (or a floor runner) and an upper runner (or a ceiling runner) (not illustrated) constituting a main framework. The stud 10 extends in the longitudinal direction (vertical direction), and

the upper runner and the lower runner extend in the lateral direction (horizontal direction). Here, both the upper runner and the lower runner (not illustrated) are formed of a lightweight steel frame, such as a grooved steel. The upper runner is attached to an upper floor structure with the opening facing downward, and the lower runner is mounted to the lower floor structure with the opening facing upward.

[0020]

10 The studs 10 are formed of a grooved steel with lips of lightweight steel frames, but the studs 10 may be formed of grooved steel or square steel pipe, instead.

[0021]

15 An upper end and a lower end of each stud 10 are fitted into the upper runner and the lower runner, respectively, and thus each stud 10 is fixed to the upper runner and the lower runner. Here, although not illustrated, multiple oscillation stoppers (not
20 illustrated) extending in the horizontal direction may be provided at a predetermined pitch (for example, 1,200 millimeter (mm) pitch) in the height direction of the studs 10.

[0022]

25 The studs 10 and the upper runner and the lower runner (not illustrated) are, for example, lightweight steel frame members having a thickness of 0.4 mm or more, and steel runners and steel studs specified in Japanese Industrial Standards (JIS) A 6517
30 ("Building steel base material"), equivalents thereof, compliant products, or compatible products may be used. In the partition wall 100, multiple studs 10 are installed between the lower runner and the upper runner

at intervals of 606 mm or less (for example, intervals of a 606 mm or 455 mm) in the widthwise direction of the wall (right and left directions in FIG. 3).

[0023]

5 The fastening structure of the underlay, the intermediate layer, and the overlay is described below in the order of FIGS. 1 to 3.

[0024]

 As illustrated in FIG. 1, multiple underlay
10 face members 21 are fastened to the front side (front side of the paper surface of the drawing) of the multiple studs 10 to form an underlay 20. A closed stringer 81, (an example of the building member) included in a staircase 80, as well as multiple treads
15 82 and risers 83 fixed to the closed stringer 81 are installed where the front surface of the underlay 20 is.

[0025]

 The staircase 80 is installed independent
20 of the studs 10 and the underlay 20, that is, independent of the partition wall 100, and is provided with a space between the studs 10 and the closed stringer 81 to accommodate the installation of the underlay 20 illustrated in the figure and also the
25 installation of an intermediate layer 30 and an overlay 40 described below. Here, the staircase 80 in the illustrated example is a closed stringer staircase, but the closed stringer 81 may include an open stringer, and thus an open stringer staircase including an open
30 stringer may be applied.

[0026]

 The method of constructing the staircase 80 included in the staircase space and the partition wall

100 on the side of the staircase 80 is performed in the order of, first attaching the staircase 80 to structural components (foundation beam and floor beams on the second floor, for example) of the upper and lower floors (for example, the first and second floors), then installing the multiple studs 10 on the side of the staircase 80, installing the underlay face members 21 in the space between the studs 10 and the closed stringer 81, and fastening the underlay face members 21 to the studs 10.

[0027]

As the underlay face member 21, a gypsum plate, a gypsum board, a calcium silicate plate, a particle board, a hardboard, plywood, structural plywood, or the like can be applied, and among them, the gypsum plate or gypsum board can be suitably used. Here, in addition to a general gypsum board, the gypsum board includes a reinforced gypsum board, an ordinary hard gypsum board, a sheathing hard gypsum board, a moisture absorptive and desorptive reinforced gypsum board, a moisture absorptive and desorptive ordinary gypsum board, a moisture absorptive and desorptive sheathing hard gypsum board, a gypsum plate with a glass fiber nonwoven fabric, a glass mat gypsum board, and the like.

[0028]

For example, in a case where the gypsum board is applied to the underlay face members 21, the dimensions of the short side, the long side, and the thickness thereof are 910 mm × 1,820 mm × 9.5 mm for quasi-non-combustible material or are 910 mm × 1,820 mm (2,420 mm or 2,730 mm) × 12.5 mm (15 mm, 21 mm or 25 mm) for non-combustible material or the like. The width

of the gypsum board may be 606 mm, 1,000 mm, 1,220 mm, or the like, instead of 910 mm.

[0029]

5 The underlay face member 21 is fastened to the stud 10 by a fastening member 50 (an example of a first fixing member). Here, the first fixing member may be a nail, a screw, or the like, in addition to the fastening member in the illustrated example.

[0030]

10 In the illustrated example, the multiple underlay face members 21 are longitudinally arranged on the multiple studs 10. Here, the multiple underlay face members 21 may be laterally arranged, instead.

[0031]

15 As illustrated in FIG. 1, since the staircase 80 has already been constructed in front of the studs 10, the closed stringer 81 included in the staircase 80 hinders the driving in of the fastening members 50 when the underlay face members 21 are to be
20 fastened to the studs 10.

[0032]

The fastening pitch t_1 , in a regular section where the closed stringer 81 does not hinder the fastening performed using the fastening member 50,
25 is set to, for example, about 300 mm.

[0033]

In contrast to this, the fastening by the fastening members 50 is not performed in the region where the closed stringer 81 would cause a hinderance,
30 and instead the fastening by the fastening members 50 is performed in the upper and lower positions relative to the closed stringer 81, that is, in a region avoiding the closed stringer 81 (building member).

[0034]

As illustrated in FIG. 1, the fastening pitch t_2 of the fastening members 50 in the region avoiding the closed stringer 81 can be set to about 750 mm at maximum.

[0035]

As in the illustrated example, in the region avoiding the closed stringer 81, the underlay face member 21 is fastened to the stud 10 by the fastening member 50, and the fastening pitch t_2 is set to about the 750 mm at maximum, and thus the underlay face members 21 can be smoothly fastened to the studs 10 while ensuring the fastening strength of the underlay face members 21 to the studs 10. In a case where the fastening strength can be ensured even when the fastening pitch t_2 exceeds the 750 mm, the fastening pitch t_2 may be set in a range exceeding the 750 mm.

[0036]

A fastening structure of the studs 10 and the underlay 20 is formed by fastening the multiple underlay face members 21 to the multiple studs 10.

[0037]

Next, as illustrated in FIG. 2, multiple intermediate layer face members 31 are fastened to the front surface of the underlay 20 (the surface facing the closed stringer 81).

[0038]

As the intermediate layer face member 31, a gypsum plate, a gypsum board, a calcium silicate plate, or the like is applied as in the case of the underlay face member 21, and among these, the gypsum plate or the gypsum board can be suitably used.

[0039]

In the illustrated example, the multiple intermediate layer face members 31 are longitudinally arranged on the underlay 20. Here, the multiple
5 intermediate layer face members 31 may be laterally arranged, instead.

[0040]

The intermediate layer face members 31 are fastened to the underlay 20 by both an adhesive, such
10 as a vinyl acetate-based adhesive (not illustrated), and staples 60 (an example of a third fixing member).

[0041]

The staple 60 is driven into the adhesive in the front view, for example, but the staple 60 may
15 be driven into a position not corresponding to the adhesive such that the staple 60 does not get driven into the adhesive.

[0042]

As illustrated in FIG. 2, the staples 60
20 include both peripheral staples 61 driven in at a relatively dense pitch along the peripheral edges of the intermediate layer face members 31, and central staples 62 driven in at a relatively coarse pitch in the central area of the respective intermediate layer
25 face members 31.

[0043]

As illustrated in FIG. 2, since the staircase 80 has already been constructed in front of the underlay 20, the closed stringer 81 included in the
30 staircase 80 hinders the driving in of the staples 61, 62 when the intermediate layer face member 31 is fastened to the underlay 20.

[0044]

Regarding the fastening pitch in the regular section where the closed stringer 81 does not hinder the fastening performed using the staples 61, 62, the fastening pitch t_3 of the peripheral staple 61 is set to about 100 mm, and the fastening pitch t_4 of the central staples 62 is set to about 200 mm.
[0045]

Thus, the peripheral edges of the intermediate layer face members 31 are fastened to the underlay 20 by the staples 61 with a relatively dense pitch, and the center of the respective intermediate layer face members 31 are fastened to the underlay 20 by the staples 62 with a relatively coarse pitch, and thus the fastening strength of the intermediate layer face members 31 to the underlay 20 can be enhanced while minimizing the number of staples 60 as much as possible, and further, the monolithic integrity (performance in deforming uniformly as a single unit) of the constituent members of the partition wall 100 in the event of deformation during an earthquake can be enhanced, and the constituent members of the partition wall 100 can be prevented from falling off (the overlay 40 can be prevented from falling off from the intermediate layer 30) in the event of a fire.
[0046]

The intermediate layer face members 31 are further fastened to the studs 10 by a reinforcing fastening member 65 (an example of a fifth fixing member) passing through the underlay face members 21. In the illustrated example, each intermediate layer face member 31 is fastened to a corresponding stud 10 by one reinforcing fastening member 65, but two or more reinforcing fastening members 65 may be used per stud

10. The reinforcing fastening member 65 further enhances the monolithic integrity of the stud 10, the underlay 20, and the intermediate layer 30. Here, the reinforcing fastening member 65 may be driven in from the surface of the overlay face member 41 described below, and fastened to the stud 10 by passing through both the intermediate layer face member 31 and the underlay face member 21, but is preferably driven in from the surface of the intermediate layer face member 31 in the illustrated example.

[0047]

In contrast to this, the fastening by the staples 60 is not performed in the region where the closed stringer 81 would cause a hinderance, and instead the fastening by the staples 60 is performed in the upper and lower positions relative to the closed stringer 81, that is, in the region avoiding the closed stringer 81 (building member).

[0048]

As illustrated in FIG. 2, the fastening pitch t_5 of the staple 60 in the region avoiding the closed stringer 81 can be set to about 750 mm at maximum.

[0049]

As in the illustrated example, in the region avoiding the closed stringer 81, the intermediate layer face members 31 are fastened to the underlay 20 by the staples 60, and the fastening pitch t_5 is set to about the 750 mm at maximum, and thus the intermediate layer face members 31 can be smoothly fastened to the underlay 20 while ensuring the fastening strength of the intermediate layer face members 31 to the underlay 20. In a case where the

fastening strength can be ensured even when the fastening pitch t5 exceeds the 750 mm, the fastening pitch t5 may be set in a range exceeding the 750 mm.

[0050]

5 The intermediate layer 30 is formed by fastening the multiple intermediate layer face members 31 to the underlay 20, and in turn, a fastening structure of the underlay 20 and the intermediate layer 30 is formed.

10 [0051]

Next, as illustrated in FIG. 3, multiple overlay face members 41 are fastened to the surface of the intermediate layer 30 (the surface facing the closed stringer 81).

15 [0052]

As the overlay face member 41, a gypsum plate, a gypsum board, a calcium silicate plate, or the like is applied as in the case of the underlay face member 21 and the intermediate layer face member 31, and among them, the gypsum plate or the gypsum board can be suitably used. For example, the underlay face member 21 and the intermediate layer face member 31 are formed of the reinforced gypsum board, and the overlay face member 41 is formed of general gypsum board, so that the partition wall 100 having a three-layer structure and fire resistance is formed.

[0053]

In the illustrated example, the multiple overlay face members 41 are longitudinally arranged on the intermediate layer 30. Here, the multiple overlay face members 41 may be laterally arranged, instead.

[0054]

The overlay face members 41 are fixed to the intermediate layer 30 by both an adhesive, such as a vinyl acetate-based adhesive, (not illustrated) and staples 70 (an example of a fourth fixing member).

5 [0055]

The staple 70 is driven into the adhesive in the front view, for example, but the staple 70 may be driven into a position not corresponding to the adhesive such that the staple 60 does not get driven
10 into the adhesive.

[0056]

As illustrated in FIG. 3, the staples 70 include both peripheral staples 71 driven in at a relatively dense pitch along the peripheral edges of
15 the overlay face members 41 and central staples 72 driven in at a relatively coarse pitch in the central area of the respective overlay face members 41.

[0057]

As illustrated in FIG. 3, since the
20 staircase 80 has already been constructed in front of the intermediate layer 30, the closed stringer 81 included in the staircase 80 hinders the driving in of the staples 71 and 72 when the overlay face members 41 are fastened to the intermediate layer 30.

25 [0058]

Regarding the fastening pitch in the regular section where the closed stringer 81 does not hinder the fastening performed using the staples 71 and 72, the fastening pitch t_6 of the peripheral staples 71
30 is set to about 100 mm, and the fastening pitch t_7 of the central staples 72 is set to about 200 mm.

[0059]

Thus, the peripheral edges of the overlay face member 41 are fastened to the intermediate layer 30 by the staples 71 with a relatively dense pitch, and the center of the respective overlay face members 41 are fastened to the intermediate layer 30 by the staples 72 with a relatively coarse pitch, and thus the fastening strength of the overlay face members 41 to the intermediate layer 30 can be increased while minimizing the number of staples 70 as much as possible, the monolithic integrity (performance in deforming uniformly as a single unit) of the constituent members of the partition wall 100 in the event of deformation during an earthquake can be enhanced, and the constituent members of the partition wall 100 can be prevented from falling off (the overlay 40 can be prevented from falling off from the intermediate layer 30) in the event of a fire.

[0060]

In contrast to this, the fastening by the staples 70 is not performed in the region where the closed stringer 81 would cause a hinderance, and instead the fastening by the staples 70 is performed in the upper and lower positions relative to the closed stringer 81, that is, in the region avoiding the closed stringer 81 (building member).

[0061]

As illustrated in FIG. 3, the fastening pitch t_8 of the staple 70 in the region avoiding the closed stringer 81 can be set to about 750 mm at maximum.

[0062]

As in the illustrated example, in the region avoiding the closed stringer 81, the overlay

face member 41 is fastened to the intermediate layer 30 by the staples 70, and the fastening pitch t8 is set to about the 750 mm at maximum, and thus the overlay face member 41 can be smoothly fastened to the intermediate layer 30 while ensuring the fastening strength of the overlay face member 41 to the intermediate layer 30. In a case where the fastening strength can be ensured even when the fastening pitch t8 exceeds the 750 mm, the fastening pitch t8 may be set in a range exceeding the 750 mm.

[0063]

The overlay 40 is formed by fastening the multiple overlay face members 41 to the intermediate layer 30, and in turn a fastening structure of the intermediate layer 30 and the overlay 40 is formed, and, the underlay 20 is fastened to the studs 10, the intermediate layer 30 is fastened to the underlay 20, and the overlay 40 is fastened to the intermediate layer 30 to form the partition wall 100.

[0064]

In the cross-sectional view of the partition wall 100 illustrated in FIG. 4, a vertical joint 75 of the overlay 40 is, for example, a gapped joint, an adhesive 78 is applied to the front surface of the overlay 40 corresponding to the vertical joint 75, and a hat joiner 77 is attached to the vertical joint 75. Here, the adhesive 78 may be applied to the rear surface of the hat joiner 77, and the hat joiner 77 may be attached to the vertical joint 75. Although not illustrated, a horizontal joint may be a gapped joint, and the hat joiner may be attached to the horizontal joint. Further, although not illustrated, a sealing member may be applied between the hat joiner

and the intermediate layer (including the joint). By applying the sealing member, the fire resistance performance of either or both of the vertical joint and the horizontal joint is improved. In addition, although not illustrated, the vertical joint and the horizontal joint may butt joints. Further, although the illustrated example is a mode in which the hat joiner 77 is attached by the adhesive 78, the hat joiner can be attached by adhesive tape or double-sided adhesive tape.

[0065]

A belt-like steel plate (not illustrated) extending in the lateral direction may be provided between the overlay 40 and the intermediate layer 30. As an example, the overlay 40 includes the vertical joint 75 and a horizontal joint (not illustrated), and the belt-like steel plate is provided at a position (a predetermined height level from the floor surface) corresponding to the horizontal joint on the rear surface of the overlay 40. For example, a galvanized steel plate or the like is applied as the steel plate, and the steel plate is bonded to the front surface of the intermediate layer 30 and the rear surface of the overlay 40 via an adhesive, such as a quick-drying bond. The steel plate may be attached by means of staples, fastening members, adhesive tape, or double-sided adhesive tape, instead of the adhesive. The steel plate may be provided at various positions not corresponding to the horizontal joint between the overlay 40 and the intermediate layer 30. Further, the steel plate may be provided between the stud 10 and the underlay 20 or between the underlay 20 and the intermediate layer 30.

[0066]

The steel plate functions as a support base that supports, in a cantilever manner, a retrofit-type member (not illustrated) that is retrofitted to an indoor side of the overlay 40. For example, one end of a rod-shaped support member (not illustrated) is fixed to the steel plate, the other end of the support member protrudes into the room, and thus a retrofit-type member such as a handrail, a wall hanger, a backrest, or an armrest is fixed to the other end of multiple support members.

[0067]

As described above, the steel plate is a rigid plate member, and thus is suitable as a member having a function as a support base that supports a retrofit-type member. Further, since the steel plate is a relatively thin flat-shaped plate member, it is suitable as a member sandwiched between the intermediate layer 30 and the overlay 40. Since it is desirable that the steel sheet has the minimum rigidity capable of supporting the retrofit-type member that is as thin as possible, the steel sheet is preferably in a range of 0.4 mm to 1.2 mm.

[0068]

In the partition wall 100, the fastening positions of the first fixing member 50 for fastening the underlay face member 21 to the stud 10, the third fixing member 60 for fastening the intermediate layer face member 31 to the underlay face member 21, and the fourth fixing member 70 for fastening the overlay face member 41 to the intermediate layer face member 31 are set in regions avoiding the closed stringer 81. Thus, in the staircase space where the staircase 80 is constructed

in advance, the partition wall 100 having excellent fire-resistance performance can be smoothly constructed on the side where the staircase 80 is.

[0069]

5 Note that other embodiments, such as those in which other elements are combined with the above configurations, may be used, and the present disclosure is not limited to the configurations illustrated here. The configurations of the present disclosure may be
10 changed without departing from the purpose of the present disclosure, and the configurations can be appropriately determined according to the usage form.

[0070]

 The present international application is
15 based upon and claims priority to Japanese Patent Application No. 2022-088607 filed on May 31, 2022, the entire contents of which are incorporated herein by reference.

20 EXPLANATION OF REFERENCE NUMERALS

[0071]

10 Stud
20 Underlay
21 Underlay face member
25 30 Intermediate layer
31 Intermediate layer face member
40 Overlay
41 Overlay face member
50 Fastening member (First fixing member)
30 60 Staple (Third fixing member)
61 Peripheral staple
62 Central staple (Staple)
65 Reinforcing fastening member (Fifth fixing member)

	70	Staple (Fourth fixing member)
	71	Peripheral staple
	72	Central staple (Staple)
	75	Vertical joint
5	77	Hat joiner
	78	Adhesive
	80	Staircase
	81	Stringer
	82	Tread
10	83	Riser
	100	Partition wall (Building wall)

CLAIMS

[Claim 1]

A building wall comprising:

5 an underlay connected to studs arranged at predetermined intervals, the underlay being formed of a plurality of underlay face members; and

an overlay connected to the underlay face members, the overlay being formed of a plurality of
10 overlay face members, wherein

a building member independent of the building wall is installed where front surfaces of the overlay face members are, the front surfaces being opposite to rear surfaces thereof facing the underlay
15 face members,

the underlay face members are fastened to the studs by first fixing members, and the overlay face members are fastened to the underlay face members by second fixing members, and

20 fastening positions of both the first fixing members and the second fixing members are set in a region avoiding the building member.

25

[Claim 2]

A building wall comprising:

an underlay connected to studs arranged at
30 predetermined intervals, the underlay being formed of a plurality of underlay face members;

an intermediate layer connected to the underlay face members, the intermediate layer being

formed of a plurality of intermediate layer face members;
and

an overlay connected to the intermediate
layer face members, the overlay being formed of a
5 plurality of overlay face members, wherein

a building member independent of the
building wall is installed where front surfaces of the
overlay face members are, the front surfaces being
opposite to rear surfaces thereof facing the
10 intermediate layer face members,

the underlay face members are fastened to
the studs by first fixing members, the intermediate layer
face members are fastened to the underlay face members
by third fixing members, and the overlay face members
15 are fastened to the intermediate layer face members by
fourth fixing members, and

fastening positions of each of the first
fixing members, the third fixing members, and the
fourth fixing members are set in a region avoiding the
20 building member.

25 [Claim 3]

The building wall according to claim 2,
wherein the intermediate layer face members are further
fastened to the studs by fifth fixing members that are
reinforcing members that pass through the underlay face
30 members.

[Claim 4]

The building wall according to claim 1,
wherein a fastening pitch of both the first fixing
5 members and the second fixing members is 750 mm at
maximum.

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[Claim 5]

The building wall according to claim 2 or
claim 3, wherein a fastening pitch of the first fixing
members, the third fixing members, and the fourth
15 fixing members is 750 mm at maximum.

20 [Claim 6]

The building wall according to any one of
claims 1 to 4, wherein the overlay face members are
rectangular in plan view, and a fastening pitch of the
second fixing members along peripheral edges of the
25 rectangular overlay face members is narrower than a
fastening pitch of the second fixing members in
interior sections of the rectangular overlay face
members.

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[Claim 7]

The building wall according to claim 5,
wherein both the intermediate layer face members and
the overlay face members are rectangular in plan view,
5 and the fastening pitch of the third fixing members and
the fourth fixing members along peripheral edges of the
rectangular intermediate layer face members and the
rectangular overlay face members is narrower than the
fastening pitch of the third fixing members and the
10 fourth fixing members in interior sections of the
rectangular intermediate layer face members and the
rectangular overlay face members.

15

[Claim 8]

The building wall according to any one of
claims 1 to 4, wherein a rear surface of the overlay is
20 provided with a steel plate.

[Claim 9]

25 The building wall according to claim 8,
wherein the overlay is equipped with a vertical joint
and a horizontal joint, and the steel plate is provided
at a position corresponding to at least the horizontal
joint on the rear surface of the overlay.

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[Claim 10]

The building wall according to any one of claims 1 to 4, wherein the building member is a closed stringer included in a staircase.

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[Claim 11]

The building wall according to claim 10,
10 wherein the closed stringer encompasses both the closed stringer included in a closed stringer staircase and an open stringer included in an open stringer staircase.