

PATENT SPECIFICATION

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DRAWINGS ATTACHED.

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COMPLETE SPECIFICATION.

Improvements in or relating to a Wall Construction and/or Methods of Erecting said Wall Construction.

We, JOHANNES JACOBUS VAN LOGHEM, of 83 Sophia Street, Rotorua, New Zealand, a New Zealand Citizen, and JOHANNES LA GROUW, of Te Wairoa Road, Rotorua, New Zealand, a New Zealand Citizen, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to building construction and particularly methods of constructing a wall and/or a wall constructed thereby.

The present invention is concerned with the construction of walls both exterior and interior or partition walls and has been devised to connect the components making up these walls in a way which will save labour in the construction of the building in that a strong structure can be relatively quickly and easily erected.

Accordingly in one aspect the invention consists in a method of wall construction comprising the steps of erecting columns which carry longitudinal key locking slots therein, inserting connecting members having key members and splayed engaging means with said key members engaged in said key locking slots and fitting planks between adjacent columns, said planks having splayed engageable slot means in the ends bearing against the column, said engageable slot means being complementary to said splayed engaging means in said connecting members with said splayed engaging means of said connecting members engaged within said complementary engageable slot means to hold said planks in association with said columns.

And in a further aspect the invention consists in a wall construction comprising col-

umns carrying longitudinal key locking slots therein, connecting members having key members and splayed engagement means, said key members being engaged in said key locking slots, and planks fitted between adjacent columns, said planks having splayed engageable slot means in the ends bearing against the columns, said engageable slot means being complementary with said splayed engaging means of said connecting members with said splayed engaging means of said connecting members engaged within said complementary engageable slot means at the end of said planks to hold said planks in association with said columns.

One preferred form of the invention will now be described with reference to the accompanying drawings in which:

Figure 1 is a typical plan section through walls according to the present invention.

Figure 2 shows a sectional detail of a corner post.

Figure 3 shows a sectional detail of a connecting post.

Figure 4 shows a sectional detail of a connecting member.

Figure 5 shows a sectional detail of an internal corner post.

Figure 6 is a pictorial detail of a corner column used in the structure.

Figure 7 is a pictorial detail of a connecting post.

Figure 8 is a detail perspective view of the connecting member adapted to join the post to the plank in the wall.

Figure 9 is a perspective detail of an alternative form of connecting member.

Figure 10 is a detail of a double tongue and groove plank used in the wall, preferably for exterior walls, and

Figure 11 is a detail of a single tongue

and groove plank used, preferably for internal partitions.

In the preferred form of the invention a number of columns as will be described in detail herebelow are appropriately positioned to extend from a pre-laid floor structure. The columns herein described are not required to support any weight load as this is carried through the solid plank walls. Columns are used herein to describe these members which provide some lateral support and operate to connect the ends of the planks. The columns are preferably formed as extruded aluminium alloy members and extend for the total height of the wall. However extruded plastics members could also be used.

A corner column 1 shown in detail in Figures 2 and 6 is a substantially square post of hollow cross section having the outer two sides 2 and 3 at right angles one to the other arranged with an aesthetically pleasing finish provided for example by small corrugations in the surface thereof. Projections 2a and 3a extend beyond the inner walls 4 and 5 to provide weathering strips arranged to engage with the outer face of the planks 6 being joined. A weather seal 7 may be inserted by any sealing tool or gun between the extensions 2a and 3a on the side of the associated plank 6. Ribs 8 project in from the weather extensions 2a and 3a preferably to engage with the outer face of the plank itself and define a cavity in which the seal may be placed. In this way a satisfactory weather seal is provided between the post and the planks.

The inner sides 4 and 5 have a rounded inner corner from which project further ribs 9 shaped to hold a quadrilateral beading 10 adapted to fit within the interior corner made between the planks 6 joined at right angles.

Each corner post 1 includes key locking slots on the sides which are abutted by the ends of the planks, that is the internal sides 4 and 5. These key locking slots 12 comprise a thickened strip in which a groove having an enlarged interior cavity 13 and a neck opening 14 is formed with the neck opening directed outwardly.

In the end of each plank 6 adapted to be abutted against the column is formed a splayed engageable slot means 11. The splayed engageable slot may be in the shape of a dove tail or fish tailed shaped slot and is preferably formed by two cuts formed by any suitable cutting tool, for example a saw with the cuts inclined at an angle one to the other so that the saw cuts are adjacent one to the other on the edge of the plank and diverge as they extend inwardly.

Connecting members 15 are provided to join the column 1 to the planks 6 abutted

thereagainst. Each connecting member 15 comprises a splayed engaging means 16 complementary to the engageable slot means 11 formed in the end of the plank 6 and a key member engageable within the key locking slot associated with the column 1. The key member comprises a bulbous rib 17 connected to the splayed engaging means 16 by a neck 18 with the neck 18 and bulbous rib 17 being complementary to the necked opening 14 and the cavity 13 in the column 1. In this way the connecting member 15 can be used to hold the planks firmly locked against the column 1.

The connecting members 15 are normally provided in lengths shorter than the total height of the wall, for example in lengths of approximately two feet or slightly more although longer lengths can be used. The length of connecting member is preferably inserted with the key member engaged in the key locking slot. The planks may then be fitted down from the top of the connecting member by engaging the splayed engageable slot with the complementary splayed engaging means 16. By using the shorter lengths of connecting members 15 it is not necessary to lift each plank to the total height of the column and this aids in erecting a wall more quickly. The connecting means is preferably a force fit with both the key locking slot and the splayed engageable slot 11 so that a firm connection is provided between the planks and the column.

A weathering rib 19 projects from the internal faces 4 and 5 of the column between the weather extensions 2a and 3a and the key locking slots 12. This weathering rib 19 is shaped to engage within a complementary slot 20 formed in the end of the plank 6. The slot 20 is also preferably formed as an inclined saw cut and the weathering rib 19 is J-shaped in cross section with the dimension of the rib and slot arranged so that both the toe and heel of the J engage with the wall of the slot 20, thus providing an effective weather seal.

The connecting columns also include an intermediate or T-shaped column 21 (Fig. 3) arranged to join adjacent aligned lengths of planking 6 and if necessary to form a connection from which an internal wall 24 can be taken. In cross section the post 21 comprises a shank 22 having key locking slots in either side thereof and intermediate of the length. A further key locking slot is provided on the inner end of the shank 22 and these key locking slots 12 are identical with the key locking slots 12 described in connection with the column 1 and similar reference numerals are used to indicate the various parts on the drawings. Also weather ribs 19 extend from either side of the shank between the key locking slots 12

and the head 23 of the post 21. The arrangement of the parts is similar to the arrangement of the parts on the inner faces of the column 1 so that planks having identical slots cut therein may be engaged either with the post 1 or the post 21. The head 23 operates as the weather extensions in a similar way to the extensions 2a and 3a.

Pictorial details of the column 1, joining column 21 and the connector 15 are illustrated in more detail in Figures 2 to 8 of the accompanying drawings.

A modified connecting member 25 may be used to join adjacent planks. The connecting member 25 comprises splayed engaging means 29 extending in opposite directions with the splayed engaging means being arranged to engage within complementary engageable slot means formed in the planks being joined. The splayed engaging means 29 are preferably connected by a throated section 28 with the sides of the engaging means 29 being of similar size and shape to the engaging means 16 and the connecting members 15. The connecting member 25 may be used to join adjacent lengths of planking or to join an interior wall to an exterior wall. Also it may be used in short lengths as above described with the connector 15.

A detail of the member 25 is illustrated in Figure 9 and also details of the planking used are illustrated in Figures 10 and 11. The planking illustrated in Figure 10 is the planking normally used on exterior walls and shows the additional groove 20 which is provided for the weather rib 19. This plank is normally protected with an aluminium cladding not shown in the accompanying drawings on the outer face thereof. The planking illustrated in Figure 11 is a thinner planking normally used for internal partitions.

Where the wall is to include a door frame, window frame or other fittings conventional building procedures may be used. As was stated a typical plan section is illustrated in Figure 1 of the accompanying drawings. Because of the slot 20 provided in the end of the planking it is possible for a weather seal 34 to be used. This weather seal comprises an aluminium member which is inserted as is illustrated in the accompanying drawings to assist in providing a weather seal around the fittings.

In use and to erect a wall according to the present invention the foundations for the building are installed in the normal way and the plates are laid on top of the foundations. The floor joists supported on the plates again in accordance with conventional building techniques have the ends thereof dove tailed and arranged to engage within dove tailed grooves provided in the inner face of the bottom plank 6. The bot-

tom plank 6 is then fitted in place and the posts, either the corner post 1 or the connecting post 21, are installed so that they are supported to extend up from the plate. If so desired the post may be fixed in position by nailing or any other suitable means but sufficient support is generally provided through the engagement of the plank 6 with the floor joists as above described. When the columns are in position the first connecting member 15 is inserted to firmly lock the post to the bottom plank. Subsequent planks are then passed down from the top of the connecting member and the wall is erected by continuing to place successive planks one on top of the other with further connecting means being added where necessary.

It will be clear from the foregoing that by using the present invention walls may be quickly and easily erected to provide a strong and durable structure. It is of course desirable for the planking to be pre-cut to length and have the slots formed in the ends thereof so that in the on-site erection the component parts merely have to be assembled. This allows factory techniques to be used in preparing the material and reduces considerably the on-site erecting time.

WHAT WE CLAIM IS:—

1. A method of wall construction comprising the steps of erecting columns which carry longitudinal key locking slots therein, inserting connecting members having key members and splayed engaging means with said key members engaged in said key locking slots and fitting planks between adjacent columns, said planks having splayed engageable slot means in the ends bearing against the column, said engageable slot means being complementary to said splayed engaging means in said connecting members with said splayed engaging means of said connecting members engaged within said complementary engageable slot means to hold said planks in association with said columns.

2. A method as claimed in Claim 1 including the steps of using lengths of connecting members shorter than the completed height of the wall so that the planks do not need to be raised to the full height of the column before being passed down to engage with said connecting members.

3. A method of wall construction when performed substantially as herein described with reference to the accompanying drawings.

4. A wall construction comprising columns carrying longitudinal key locking slots therein, connecting members having key members and splayed engagement means, said key members being engaged in

and the head 23 of the post 21. The arrangement of the parts is similar to the arrangement of the parts on the inner faces of the column 1 so that planks having identical slots cut therein may be engaged either with the post 1 or the post 21. The head 23 operates as the weather extensions in a similar way to the extensions 2a and 3a.

Pictorial details of the column 1, joining column 21 and the connector 15 are illustrated in more detail in Figures 2 to 8 of the accompanying drawings.

A modified connecting member 25 may be used to join adjacent planks. The connecting member 25 comprises splayed engaging means 29 extending in opposite directions with the splayed engaging means being arranged to engage within complementary engageable slot means formed in the planks being joined. The splayed engaging means 29 are preferably connected by a throated section 28 with the sides of the engaging means 29 being of similar size and shape to the engaging means 16 and the connecting members 15. The connecting member 25 may be used to join adjacent lengths of planking or to join an interior wall to an exterior wall. Also it may be used in short lengths as above described with the connector 15.

A detail of the member 25 is illustrated in Figure 9 and also details of the planking used are illustrated in Figures 10 and 11. The planking illustrated in Figure 10 is the planking normally used on exterior walls and shows the additional groove 20 which is provided for the weather rib 19. This plank is normally protected with an aluminium cladding not shown in the accompanying drawings on the outer face thereof. The planking illustrated in Figure 11 is a thinner planking normally used for internal partitions.

Where the wall is to include a door frame, window frame or other fittings conventional building procedures may be used. As was stated a typical plan section is illustrated in Figure 1 of the accompanying drawings. Because of the slot 20 provided in the end of the planking it is possible for a weather seal 34 to be used. This weather seal comprises an aluminium member which is inserted as is illustrated in the accompanying drawings to assist in providing a weather seal around the fittings.

In use and to erect a wall according to the present invention the foundations for the building are installed in the normal way and the plates are laid on top of the foundations. The floor joists supported on the plates again in accordance with conventional building techniques have the ends thereof dove tailed and arranged to engage within dove tailed grooves provided in the inner face of the bottom plank 6. The bot-

tom plank 6 is then fitted in place and the posts, either the corner post 1 or the connecting post 21, are installed so that they are supported to extend up from the plate. If so desired the post may be fixed in position by nailing or any other suitable means but sufficient support is generally provided through the engagement of the plank 6 with the floor joists as above described. When the columns are in position the first connecting member 15 is inserted to firmly lock the post to the bottom plank. Subsequent planks are then passed down from the top of the connecting member and the wall is erected by continuing to place successive planks one on top of the other with further connecting means being added where necessary.

It will be clear from the foregoing that by using the present invention walls may be quickly and easily erected to provide a strong and durable structure. It is of course desirable for the planking to be pre-cut to length and have the slots formed in the ends thereof so that in the on-site erection the component parts merely have to be assembled. This allows factory techniques to be used in preparing the material and reduces considerably the on-site erecting time.

WHAT WE CLAIM IS:—

1. A method of wall construction comprising the steps of erecting columns which carry longitudinal key locking slots therein, inserting connecting members having key members and splayed engaging means with said key members engaged in said key locking slots and fitting planks between adjacent columns, said planks having splayed engageable slot means in the ends bearing against the column, said engageable slot means being complementary to said splayed engaging means in said connecting members with said splayed engaging means of said connecting members engaged within said complementary engageable slot means to hold said planks in association with said columns.

2. A method as claimed in Claim 1 including the steps of using lengths of connecting members shorter than the completed height of the wall so that the planks do not need to be raised to the full height of the column before being passed down to engage with said connecting members.

3. A method of wall construction when performed substantially as herein described with reference to the accompanying drawings.

4. A wall construction comprising columns carrying longitudinal key locking slots therein, connecting members having key members and splayed engagement means, said key members being engaged in



- said key locking slots, and planks fitted between adjacent columns, said planks having splayed engageable slot means in the ends bearing against the columns, said engageable slot means being complementary with said splayed engaging means of said connecting members with said splayed engaging means of said connecting members engaged within said complementary engageable slot means at the end of said planks to hold said planks in association with said columns.
5. A wall construction as claimed in Claim 4, wherein said columns include a corner connecting post of hollow cross section.
6. A wall construction as claimed in Claim 5, wherein some of said corner posts are exterior corner posts and each carries a weathering rib engaged in a weathering slot provided in the ends of said planks abutting against said post.
7. A wall construction as claimed in Claim 6, wherein said weathering ribs are each of J formation with the heel and the toe of the J engaging the walls of the associated slot in the planks.
8. A wall construction as claimed in Claim 6 or Claim 7, wherein said exterior corner posts also carry weathering extensions which lie adjacent to the exterior faces of the planks near the ends thereof.
9. A wall construction as claimed in any one of Claims 6 to 8, wherein said exterior corner posts each carry on the inner angle thereof a plurality of ribs which hold a quadrilateral member in the angle between the plank ends.
10. A wall construction as claimed in any one of Claims 4 to 9, wherein said columns include coupling posts positioned at and acting as connecting members between adjacent aligned sections of planking.
11. A wall construction as claimed in Claim 10, wherein said coupling posts include T formation posts each joining adjacent walls in T formation.
12. A wall construction as claimed in Claim 11, wherein said T formation posts include weathering ribs engageable in slots in the end of the planks of the aligned walls of the T-formation.
13. A wall construction as claimed in Claim 12, wherein said weathering ribs are each of a J formation with the heel and toe of the J engaging in the walls of the associated slot of the planks.
14. A wall construction as claimed in Claim 12 or Claim 13, wherein said T formation posts also carry weathering extensions which lie adjacent to the exterior faces of the planks near the ends thereof.
15. A wall construction as claimed in any one of Claims 4 to 14, wherein said splayed engaging means of said connecting members comprise outwardly extending arms projecting from adjacent said key member.
16. A wall construction as claimed in any one of Claims 4 to 15, wherein said key members of said connecting members comprise a bulbous rib member connected by a neck to the splayed engaging means of the connecting member with the key locking slots each having an enlarged interior cavity with a neck opening to the cavity, the cavity and opening being complementary to the bulbous member and neck respectively.
17. A wall construction as claimed in any one of Claims 4 to 16, wherein said planks comprise tongue and groove planks.
18. A wall construction as claimed in Claim 17, wherein said planks comprise double tongue and groove planks.
19. A wall construction as claimed in any one of Claims 4 to 18, wherein said splayed engageable slots each comprise a dove tail or fish tail slot having a narrow entry adjacent the edge of the plank and diverging as said slot extends inwardly.
20. A wall construction as claimed in any one of Claims 4 to 19, wherein further connecting members having splayed engaging means extending in opposite directions have one splayed engaging means engaging within a complementary splayed engageable slot in one wall of planks and the other splayed engaging means engaging within a complementary splayed engageable slot in the adjacent wall of planks being joined.
21. A wall construction as claimed in Claim 20, wherein said connecting member includes a throated means between said splayed engaging means.
22. A wall construction substantially as herein described with reference to the accompanying drawings.
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