

PATENT SPECIFICATION

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(54) IMPROVEMENTS IN JOINING BUILDING PANELS TO PRODUCE WEATHERPROOF EXTERNAL WALLS

(71) I, BASIL CHARLES TAYLOR, a British Subject of 29, Stuart Mould Crescent, Seven Hills, N.S.W., 2147, AUSTRALIA, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:-

The present invention relates to building panels used for the walls of dwellings and like buildings, and more particularly to methods of joining these panels to form weatherproof external walls.

In the construction of such buildings, it is common practice to use bricks for the external walls - however, brick constructions use expensive materials, are time consuming during erection, and hence expensive in labour utilisation. To save costs, and to speed up construction, various other materials are used for external walls, e.g. asbestos-cement and timber. Unfortunately, these materials per se are not architecturally attractive, and suffer from the disadvantage of requiring continuing maintenance, such as painting.

To overcome these difficulties of appearance and maintenance, with the cheaper materials, it has been proposed to construct external walls of preformed panels, comprising a backing material of asbestos-cement, or the like, and a facing formed thereon giving the appearance of brick or natural stonework, e.g. the "Stepart" panel. Stepart is a trade mark, owned by Stepart Sales & Service Pty. Ltd. of Sydney, New South Wales. The Stepart panel may be described as an imitation brick panel with the ends of adjacent panels abutting in interlocking relationship whereby the junction between the panels is not apparent. Such a panel is described in Australian patent application Specification No 488153 (57497/73).

Using preformed panel construction in-

volves sealing problems along the panel edges where adjacent panels are joined. Usually the problem has been solved - albeit unsatisfactorily - by using strips of materials (such as tape, paper, synthetics) along the joints at the backs of the panels, in conjunction with a sealing compound such as a putty along the joint itself. The panels are, of course, abutted along a stud, where the join is vertical, for support, or along a trimmer board or noggin where the join is horizontal, although in the teaching of this invention, horizontal joints need not be backed by a trimmer board or noggin.

As stated, the prior art solutions are unsatisfactory, since subsequent movement of the studs and trimmer boards tends to open up the joins, thus permitting entry of water during periods of rain behind the panels to the timber frame of the dwelling.

It is an object of the present invention to provide a method of forming the external walls of framed dwellings and like framed buildings from preformed panels in such a way that the panel joints are fully sealed against ingress of water, thus rendering the walls of the dwelling completely weatherproof. The invention also comprehends within its scope a wall construction, and a framed dwelling or like framed building incorporating such wall construction, which has been made by the method disclosed herein.

Thus in its broadest form, the invention comprises a method of constructing the external walls of framed dwellings or like framed buildings from preformed panels wherein a rigid flat metal backing member is attached to a stud of the frame of an external wall, and a pair of preformed panels having a pair of vertically extending adjacent edges are adhered by a waterproof adhesive to said backing member with said edges abutting, whereby to form a weatherproof joint.

A better understanding of the invention will be gained by reference to the drawings which illustrate preferred embodiments of the invention. In the drawings:-

5 *Figure 1* illustrates a pair of preformed panels of the interlocking type with an imitation brick facing,

Figure 2 illustrates part of the frame of an external wall of a dwelling,

10 *Figure 3* and *3a* are front and side views of a pair of panels having a horizontal joint,

Figure 4 is a horizontal cross-section of the corner structure of a dwelling in accordance with the present invention.

15 In *Figure 1* a pair of interlocking panels 1 and 2 are in position for abutment to form a vertical joint. The panels comprise a facing of imitation bricks 4 on a backing 5 (*Figures 3, 3a*) of a material such as asbestos-cement.

20 In *Figure 2* the wall frame can be seen to comprise vertical studs 6, and trimmer boards or noggins 7, extending more or less horizontally between the studs. Member 8 is a metal plate (suitably galvanised iron or steel) extending the full length of that part of the stud to which the wall panels are to be attached. Items 9 are nails or similar fastening means affixing the plate to the stud. Other plates (not shown) are similarly fixed to the other studs of the wall frame. The joints of adjacent panels are arranged to lie along metal plates 8, which are coated with a waterproof adhesive, preferably an epoxy resin such as "araldite" (araldite is a registered trade mark), the panels are then fitted together over the plates and nailed or screwed through them to the studs. Similarly horizontal joints between adjacent panels can be arranged to lie along the trimmer boards or noggins, and these joints are then constructed and sealed in the same way as are the joints lying along the studs.

45 Alternatively, referring to *Figures 3, 3a*, horizontal joints between adjacent panels need not lie along trimmer boards or noggins. Simply, a metal flashing 10 is fixed by a fastener 11 to stud 6. This flashing extends the full length of the joint around the dwelling - clearly member 10 will not be a single piece but may be formed of a number of flashing lengths overlapping at their respective adjacent ends. Clearly, this flashing will prevent ingress of water through the joint to behind the panels.

55 At the corners of the dwelling (see *Figure 4*) a pair of wall plates 12 meet studs 6. The member equivalent in function to plate 8 is metal angle member 13, which encloses the corner studs, and is affixed thereto. A pair of panels 14 and 15 intersect at the corner to form a vertical joint, and these panels, as before, are adhered by a waterproof adhesive to member 13, and nailed, screwed or otherwise to respective studs 6.

65 Thus it can be seen that due to the nature

of the backing plates, and the manner of adhering the panels thereto, as well as fastening the panels to the studs, a dwelling wall can be formed which is quite weatherproof, and will remain so despite movement of the frame members caused by timber shrinkage or foundation settlement. In this way the prior art problems are obviated.

It will be evident to those skilled in the art that various modifications can be made to the preferred methods and wall construction described above, e.g. the plates 8 and 13 need not be galvanised iron or steel. It is important that they be sufficiently rigid and strong to maintain support of the panels in the region of the joining area. Similarly, plates 8 and 13 need not be formed of a single length, but could comprise a series of members with overlapping ends.

It should be noted that the invention is applicable to wall constructions using, e.g., plain sheet material such as asbestos-cement as it is to preformed panels with decorative facings.

As mentioned previously, the preformed panels are preferably of the Stepart type. However, other panels which may or may not interlock are satisfactory. Desirably the backing is a 26 gauge hot dipped galvanised iron strip 180 mm. wide. The studs are normally 100 mm. by 50 mm. and the clouts used are desirably 25 mm by 14 gauge large head galvanised type. The adhesive preferred is araldite - an epoxy type substance but other adhesives or cements may be used.

WHAT I CLAIM IS:-

1. A method of constructing the external walls of framed dwellings or like framed buildings from preformed panels wherein a rigid, flat, metal backing member is attached to a stud of the frame of an external wall, and a pair of preformed panels having a pair of vertically extending adjacent edges are adhered by a waterproof adhesive to said backing member with said edges abutting, whereby to form a weatherproof joint.

2. A method according to claim 1, including the step of positively fastening said panels to said stud by driving fastening means through said panels to said stud.

3. A method according to claim 1 or claim 2, said method being repeated at at least some of the studs of the external walls whereby the complete said external walls are weatherproofed, and including the step of inserting flashing strips between abutting horizontal edges of respective panels forming the external walls, said flashing being fastened to said studs and/or the trimmer boards of the external wall frame.

4. A method according to claim 3 wherein at each corner of the external wall frame, a rigid metal backing member of

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WHAT I CLAIM IS:-

1. A method of constructing the external walls of framed dwellings or like framed buildings from preformed panels wherein a rigid, flat, metal backing member is attached to a stud of the frame of an external wall, and a pair of preformed panels having a pair of vertically extending adjacent edges are adhered by a waterproof adhesive to said backing member with said edges abutting, whereby to form a weatherproof joint.

2. A method according to claim 1, including the step of positively fastening said panels to said stud by driving fastening means through said panels to said stud.

3. A method according to claim 1 or claim 2, said method being repeated at at least some of the studs of the external walls whereby the complete said external walls are weatherproofed, and including the step of inserting flashing strips between abutting horizontal edges of respective panels forming the external walls, said flashing being fastened to said studs and/or the trimmer boards of the external wall frame.

4. A method according to claim 3 wherein at each corner of the external wall frame, a rigid metal backing member of

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angle cross-section is affixed to the corner studs, and the panels meeting at each corner are adhered by a waterproof adhesive to respective external faces of the angle member.

5. A method according to any preceding claim, said backing member or members each comprising a strip of galvanised iron or steel laterally extending on both sides of the studs or stud to which it is or they are affixed.

6. A framed dwelling or like framed building comprising external walls of preformed panels, said panels respectively having abutting vertically extending edges, said abutting edges arranged to overlie respective studs of the external wall frame, there being a rigid, flat, metal backing member fastened to each stud, said panels being adhered by a waterproof adhesive to respective backing members and said backing members extending the full length of abutting edges of the panels glued thereto, whereby to form weatherproof joints.

7. A dwelling or like building as claimed in claim 6 including fastening members driven through the panels into the studs to affix positively the panels thereto.

8. A dwelling or like building as claimed in claims 6 or 7, wherein flashing strips are located between horizontally extending abutting edges of said panels, said flashing strips being fastened to the studs and/or trimmer boards of the external wall frame.

9. A dwelling or like building as claimed in any one of claims 6, 7 or 8 wherein at each corner of the external wall frame, a rigid metal backing member of angle cross section is affixed to the corner studs, the panels meeting thereat being adhered by a waterproof adhesive along the external faces of said angle member.

10. A dwelling or like building as claimed in any one of claims 6, 7, 8 or 9 said backing members being formed of galvanised iron or steel plate, each member laterally extending on both sides of the stud to which it is affixed.

11. A method of constructing the external walls of a framed dwelling or like frame building, substantially as hereinbefore described and illustrated with respect to the drawings.

12. A framed dwelling or like framed building having external walls constructed substantially as hereinbefore described and illustrated with respect to the drawings.

13. A method of constructing the external walls of framed dwellings or like framed buildings from preformed panels comprising affixing rigid, flat, metal backing strips to the studs of the external wall frame, said backing strips extending laterally both sides of the studs to which they are affixed, affixing a rigid metal backing strip of angu-

lar cross-section to the corner studs at each corner of said frame, adhering by a waterproof adhesive pairs of preformed panels with vertically extending abutting edges to each backing member whereby all such edges overlie respective backing members, and said backing members extending the full length of such edges, driving fastening members through said panels into said studs, and inserting flashing strips between horizontally extending abutting edges of said panels, said flashing strips being fastened to said studs and/or the trimmer boards of the external wall frame, whereby to form weatherproof joints.

14. A dwelling or like building wherein the external walls thereof are constructed in accordance with the method of claim 13.

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