Abstract: A wall panel system for forming a wall surface on wall framing studs (12), and having wall panels (14) of reinforced magnesium based material arranged with edges of adjacent panels located in spaces between two adjacent studs, a backing strip (20) of wall panel material located in the space between two adjacent studs (12), behind the edges of the two adjacent panels (14), fastenings (22) securing the edges of the two adjacent panels to the backing strip (20), a gap (24) between the two panels, and an adhesive filler bonding compound (26) filling the gap and bonding the panel edges to one another, and further bonding the panel edges to the backing strip. Also disclosed is a method of erecting a drywall consisting of attaching a backing strip (20) to the back of a first panel (14), attaching that first panel (14) to the studs, with said backing strip located in a space between two studs, fastening another backing strip (20) along a free edge of a second panel (14), erecting that second panel in edge adjacent relation with the first panel and overlapping the backing strip (20) on the first panel, fastening the second panel (14) to the studs (12), and, fastening the second panel (14) to the backing strip (20) of the first panel (14).
WALL BOARD STUD FREE JOINT SYSTEM

FIELD OF THE INVENTION

The invention relates to wall panels, and to a system of erecting wall panels, with joints between panels formed in spaces between studs. In particular the joints are formed with backing strips of wall board material, providing joints which are made free of the studs.

BACKGROUND OF THE INVENTION

Erection of wallboard, such as gypsum wall board panels, has involved supporting four foot wide panels on studs located at 16 inch centres apart, in the usual wall framing. This located the two edges of the panels overlying one half a stud, at each side. The edge of the panel was fastened to the stud. The stud is 1.75 inches wide. Thus the edge of a panel was secured to half the stud width, ie about 0.85 inches more or less. This was in an ideal case. If there was any inaccuracy in placing the panels, the overlap might even be less. The edges of two adjacent panels had to be butted up close against each other, to ensure adequate fastening to the same stud.

The practice then involved filling the joint with a plaster type filler, and taping over the joint with paper tape. Subsequent sanding and re-filling was often required.

It is well known that as the studs age and dry out, the panel joints tend to become exposed. Fastenings sometimes pop out. Re-filling and sanding and painting is then needed.

It is also well known that this standard practice produces a wall surface which is uneven, in many cases. The filling of plaster material over the dry wall tape adds material to the surface of the wall. Unless this extra filler material is feathered out with skill, it will result in thickening of the wall surface along each joint. This will produce an uneven wall surface with raised contours along each joint.

It has now been discovered that by using a different, stronger form of reinforced wall
board panel, and an adhesive joint and bonding compound, that many of these problems can be overcome in a surprising manner. In this system the joints between adjacent panels are deliberately located in spaces between two studs.

The edges of two panels are joined by an interior backing strip formed of the same reinforced material as the panel itself. The backing strip is located inside the wall, behind the panels and in the space between two vertical studs. The backing strip can be 4-6 inches wide. This gives a substantial overlap for the edges of the two panels, and adds reinforcement and rigidity to the joint even though the joint is not supported directly on a stud.

The edges of the two panels are secured, to the backing strip, typically by drywall screws, or staples, or adhesive, or a combination. A gap is left between the edges of the two panels. This gap is filled with jointing compound which has adhesive and structural properties. The compound not only fills the gap, but actually bonds the two edges together. The compound even bonds the two edges of the panels to the backing strip. In this way it becomes possible to erect the wall framing with the studs spaced apart in arrangements other than the usual 16 inch centres.

The adhesive compound can be somewhat similar to automobile body fillers. One form can have an epoxy base, with fillers. Another form has a polyurethane base with fillers. Unlike conventional dry wall fillers, these materials have adhesive properties as well as providing a joint filling function.

One form of the reinforced wall board material is sold under the trade name Magnesia Core (trade mark). It contains glass fibre mesh reinforcement, and magnesium oxide, and natural silicates. As a result it can be bonded with epoxy type agents, or polyurethane type agents contained in the fillers.

**BRIEF SUMMARY OF THE INVENTION**

A wall panel system for forming a wall surface on framing studs, the studs being located at spaced intervals, wherein the reinforced wall panels are arranged with edges of
The invention as illustrated will be seen to show a wall structure (10), having framing
formed by a series of studs (12), located at spaced intervals. These intervals may or
may not be the 16 inch intervals usual in conventional wall framing.

Wall board panels (14), partly cut away, are shown secured to the studs (12),
by screws (16). The screws are seen to be located away from the edges of the
panels, and are located along lines wherever the studs are placed.
The wall board panels are formed of a reinforced panel material. The reinforcement is
typically a mesh material such are fibre reinforced cloth mesh, shown as (30).

One form of such material is sold under the trade name Magnesiacore (trade mark).

Edges (18) of panels (14) are shown joined to one another.

Unlike conventional dry wall, where the panel edges must lie directly over a stud, in this
system the panel edges (18) are positioned so that they are located in the spaces
between two studs. Thus the joints between two adjacent panels are located in the
spaces or gaps between two adjacent studs (12).

In order to provide for a strong junction between two panels, the panel edges (18) are
shown secured to a backing strip (20). The strip is made of the same reinforced board
material as the panels themselves. This strip (20) is located in the space within the wall
structure (10), and spaced between two studs (12).
The strip (20) is preferably from 4 to 6 inches wide, and extends somewhat less then
the full height, or length, of the panels (14) for reasons described below.

The edges (18) of the two panels are usually secured to the strip (20) by fastenings
such as screws (22). Staples, or other fastenings can also be used.
In some cases an adhesive, even the filling compound described below, is sufficient.
The edges of the two adjacent panels are spaced apart and define a gap (24) between
them.

A filling and adhesive bonding compound (26) containing epoxy adhesives is trowelled
into the gap (24) between the edges. As the compound (26) cures it bonds to the
edges of the boards and holds the edges together.

Dry wall tape is not required. The filler can be trowelled smooth with a knife, without
covering with tape.
Tape which was formerly used in conventional dry walling techniques would have required additional filler to mask the tape. This in turn would have required sanding in an attempt to conceal the contour of the extra filler. These steps are now avoided and the filler is trowelled level with the actual boards themselves. Taping, filling, and sanding are all avoided.

Some of the compound (26) will also flow between the edges (18) and the strip (20). When this cures, it will bond the two edges (18) to the strip (20) as well as bonding the edges to each other. Another suitable compound contains polyurethane based adhesive agents, with fillers.

The finished joint will thus have great strength, and will be largely independent of drying out and warping of the studs.

The panel joints at corners of the wall will also be formed with gaps (24). Filler material (26) as before will be trowelled into those gaps and will cure and bond the corner.

It is found that the usual metal corner strips, used in conventional dry wall installation are not required.

It will be understood that along the bottom and top of the wall frame of studs, there will usually be the usual bottom and top plates (28).

The backing strips (20) are cut short at the bottom and top so that the strips are shorter in length than the height of the panels. This allows the panels to lie flat on the studs and on the top and bottom plates in the typical wall framing and thus avoids interference between the backing strips and the bottom and top plates.

Erection will involve, in most cases, attaching a backing strip to the back of a first panel. Attaching that first panel to the studs with the panel edges located in the spaces between studs. Then fastening another backing strip along a free edge of a second panel.
that second panel in edge abutting relation with the first, with the free edge of the second panel overlapping the backing strip on the first panel. Fastening the second panel along the backing strip of the first panel and fastening the second panel to the studs.

In some cases it is desirable to make the backing strip from a plurality of separate backing strip pieces (32), (see Fig 1), of reinforced board material. These board material pieces (32) can be made from off cuts of the reinforced boards themselves, thus using material that would otherwise be discarded as waste, and avoiding extra expense.

In this case some of these pieces (32) can be attached, spaced apart along one edge of one panel, and other pieces (32) can be attached spaced apart along the edge of the other panel.

When fitted together the separate pieces (32) interdigitate with each other, and thus form an extremely strong rigid joint between the panels.

The foregoing is a description of a preferred embodiment of the invention which is given here by way of example only. The invention is not to be taken as limited to any of the specific features as described, but comprehends all such variations thereof as come within the scope of the appended claims.
CLAIMS

1. A wall panel system for forming a wall surface on wall framing studs (12),
wherein the studs are located at predetermined spaced intervals, and characterised by;
wall panels (14) formed of reinforced wall panel material lying on said studs and
arranged with edges of adjacent panels being located in spaces between two adjacent
studs;
a backing strip (20) of reinforced wall panel material located in the space between the
two adjacent studs behind the edges of the two adjacent panels, and overlapping each
said edge;
fastenings (22) securing the edges of the two adjacent panels to the backing strip;
a gap (24) being defined between the two said edges; and,
an adhesive filler (25) bonding compound located in said gap and bonding said panel
edges to one another, and located between said panel edges and said backing strip (20), and further bonding said panel edges to said backing strip.

2. A wall panel system for forming a wall surface on wall framing studs as
claimed in Claim 1, and further characterised wherein said panels (14) have a
predetermined height, and wherein said backing strips (20) have a predetermined
length and wherein said length of said backing strips (20) are less than said height of said
panels.

3. A wall panel system for forming a wall surface on wall framing studs as
Claimed in Claim 2 and further characterised by bonding compound (26) between said
strip and said edges of said panels.

4. A wall panel system for forming a wall surface on wall framing studs as
claimed in Claim 3, and further characterised wherein said bonding compound (26) is
selected from the group comprising epoxy based compounds and polyurethane based
compounds.
5. A wall panel system for forming a wall surface on wall framing studs as claimed in Claim 4 and further characterised by wherein said panels (14) are formed of a magnesia based compound, reinforced with glass mesh reinforcement (30).

6. A wall panel system for forming a wall surface on wall framing studs as claimed in Claim 5 and further characterised by wherein said backing strips (20) comprise a plurality of separate pieces (32) of reinforced panel board, and wherein some of said pieces are attached to the edge of one panel, at spaced intervals, and wherein other said pieces are attached to the edge of an adjacent panel, with said pieces on one panel interdigitating with the pieces on the other said panel.

7. A wall panel system for forming a wall surface on wall framing studs (12), wherein the studs are located at predetermined spaced intervals, and characterised by reinforced wall panels (14) formed of a magnesia based compound, reinforced with glass mesh reinforcement (30), said panels having a predetermined height and secured on said studs and arranged with edges of adjacent panels being located in spaces between two adjacent studs; backing strips (20) of reinforced wall panel material located in spaces between two adjacent studs behind the edges of the two adjacent panels, and overlapping each said edge, said strips having a predetermined length and wherein said length is less that said height of said panels (14); fastenings (22) securing the edges of the two adjacent panels (14) to the backing strips (20); a gap (24) being defined between the two said edges; and, an adhesive filler epoxy based bonding compound (26) located in said gap and bonding said panel edges to one another, and located between said panel edges and said backing strip (20), and further bonding compound between said strip and said edges of said panels bonding said panel edges to said backing strip.
8. A method of erecting drywall panels (14) on wall framing of studs (12) and characterised by:

- attaching a backing strip (20) to the back of a first panel (14);
- attaching that first panel (14) to said studs (12) with said backing strip located in a space between two adjacent studs (12);
- fastening another backing strip (20) along a free edge of a second panel (14);
- erecting that second panel (14) in edge adjacent relation with the first panel and overlapping said backing strip (20) on the first panel (14) and,
- fastening said second panel (14) along the backing strip (20) of the first panel (14) and fastening the second panel to the studs (12).
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

**IPC: E04F 13/24 (2006.01)**

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

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**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

**IPC: E04F 13/24 (2006.01), E04F 19/06 (2006.01)**

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

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**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

**Date of the actual completion of the international search**

18 November 2008 (18-11-2008)

**Date of mailing of the international search report**

9 January 2009 (09-01-2009)

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**Name and mailing address of the ISA/CA**

Canadian Intellectual Property Office

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Facsimile No.: 001-819-953-2476

**Authorized officer**

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