

[54] **METHOD OF RELIEVING STRAINS IN A WALL AND CONSTRUCTION THEREFOR**

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[58] **Field of Search**..... 52/105, 98, 346, 415, 417, 52/514, 573, 741, 746, 631, 204, 208, 210, 216

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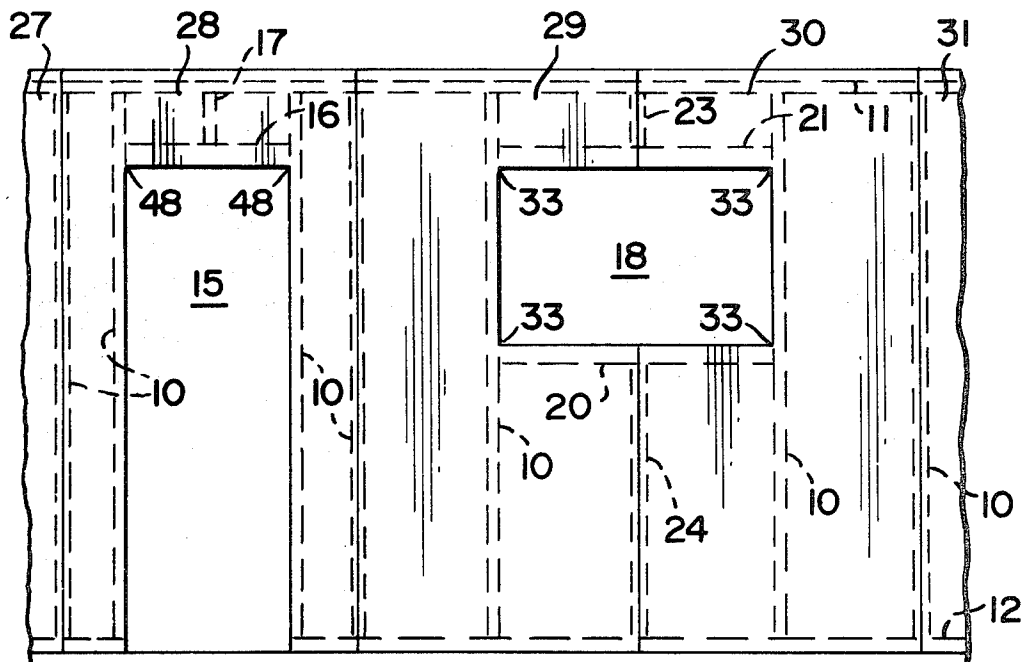
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[57] **ABSTRACT**

A method for and construction resulting from scoring the paper cover sheet of a gypsum wallboard from corners of openings therein to relieve strains and control cracking of the wallboard.

**7 Claims, 7 Drawing Figures**





# METHOD OF RELIEVING STRAINS IN A WALL AND CONSTRUCTION THEREFOR

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

This invention relates to the field of building construction and more particularly to the construction of walls and partitions in buildings.

### 2. Description of the Invention

In the construction of walls and full room height partitions it has been customary to erect framing members on either 16" or 24" centers to span the distance between a floor plate and a header. To finish the wall, gypsum wallboards are secured by fasteners or adhesive to the room-side faces of the framing members. When it is desirable to have window or door openings in the wall it has been customary to align the edges of a wallboard vertically along the face of a framing member which forms one side of the opening. A second wallboard is aligned along the face of the framing member spaced a distance from the first framing member equal to the horizontal dimension of the opening. In the case of a door, the open area between the top lintel and the room header is closed by means of cutting a smaller piece of gypsum wallboard which is used to span the framing members which form the vertical frame of the door jamb. In the case of a window, the openings above and below the window opening are covered by similarly cutting small pieces of gypsum wallboard. Thus, for a simple window opening four pieces of gypsum wallboard are used. Smaller pieces must be cut to fit the opening. Following the securing of the gypsum wallboard the resulting gaps between the board edges were finished with joint treatments in the usual manner.

In addition, to using separate pieces of gypsum wallboard which left gaps between the pieces, it is also customary to provide control joints. These control joints are produced by inserting separate metal or plastic accessories at and parallel to the jamb studs above and below the window openings and above the door openings. If desired, they may also be placed at predetermined locations in long blank walls. These plastic or metal accessories are usually u-shaped pieces which can expand and contract to relieve strains induced by wall movement. The use of such accessories requires a more accurate cutting and fitting of the wallboard to fit between control joints.

Additional cost of parts and labor are the result of this prior art solution to the problem of relieving strains and controlling cracking of the wallboard.

It has been found that unless there was a gap between wallboards outlining the window or door opening, racking forces and strains would result in cracking of the wallboard from the corners of the opening toward the outer edge of the board. Mobile homes and modular units which are moved from factory to site are particularly susceptible to such forces in transit.

## SUMMARY OF THE INVENTION

The present invention permits the construction of a wall using full sheets of gypsum wallboard with openings cut out of the board. This eliminates the extra labor of cutting smaller pieces and fitting them between larger boards above and below the desired opening.

It is an object of the present invention to provide a novel method of controlling cracking of wallboards around window and door openings.

It is another object of the present invention to provide a novel construction which is time and labor saving.

It is yet another object of the present invention to provide a novel method and construction to avoid the use of other accessories in achieving a structure with controlled cracking.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

Other objects and advantages will become apparent to those skilled in the art when the following detailed description is considered in the light of the drawing in which like numerals indicate like elements and in which:

FIG. 1 is a front elevational view of the framing members erected in place and providing for window and door openings;

FIG. 2 is a front elevational view of a wall with gypsum wallboards secured over the framing members and covering the window and door openings;

FIG. 3 is a front elevational view of the wall of FIG. 2 with the window and door openings cut out of the gypsum wallboards;

FIG. 4 is an enlarged front elevational view of a portion of the wall of FIG. 3, illustrating the scoring of the board;

FIG. 5 is a cross-sectional view of the wall portion of FIG. 4 taken along lines 5-5 thereof;

FIG. 6 is a front elevational view of the wall portion of FIG. 4 with a partial joint treatment applied over the score line; and

FIG. 7 is an elevational view of an alternative type of score line in the wallboard.

Referring now to the drawing and particularly FIG. 1, there is shown the framing members secured in place to form a wall. Vertical framing members 10 span the area between a double header 11 and a double base plate 12. In general, the framing members, header and plates are 2 inches x 4 inches pieces of lumber conventionally used for framing. If desired, 2 inches x 2 inches pieces may be used, as may be more customary in the construction of mobile homes.

To accommodate a door opening 15, a lintel 16 is secured to span between adjacently spaced vertical framing members 10 at a height suitable for the installation of a door (not shown). A strengthening vertical framing member 17 is secured between lintel 16 and header 11.

To define a window opening 18, spaced upper and lower horizontal members 20 and 21 are secured between adjacent framing members 10. Strengthening vertical framing members 23 and 24 span between horizontal member 21 and header 11 and horizontal member 20 and plate 12, respectively.

FIG. 2 illustrates the effect of the next step in constructing the novel construction of the invention. Gypsum wallboards 27 - 31 are fastened vertically to the various framing members 10, 16, 17, 20, 21, 23 and 24. This can be done by using an adhesive or by using fasteners, such as nails or wallboard screws in the conventional manner or combinations of these fasteners.

The front elevational view of the wall after the openings have been cut out of the gypsum wallboard panels 28, 29 and 30 is shown in FIG. 3. To make the openings, the tradesman uses a saw or other cutting instrument and cuts the opening through the gypsum wall-

board along the inner face of the peripheral framing members.

It is thus seen that the erection of the wall with provision for window and door openings has been greatly simplified in that only large sheets of gypsum wallboard need be used. However, if nothing further is done, the wallboard may be subject to forces which can cause cracks in it.

Reference may now be had to FIG. 4 to show in detail the novel method of the invention which provides for avoiding cracks in the wallboard.

Wallboard 29 is secured to framing member 10 header 11 and horizontal member 21 by adhesive or other fastening means. Opening 18 is cut into the wallboard 29 and one of its corners 33 appear at the juncture of framing member 10 and horizontal member 21. The face papers of wallboard 29 is scored from the corner 33 to a line 35 along the centerline of framing member 10 and along this line 35 to the upper edge 36 of wallboard 29.

Of course, wallboard 29 is scored at each of the other corners (not shown) and along the centerlines of the adjacent framing members to the nearest horizontal edge of the wallboard.

FIG. 5 shows in cross-section a detailed view of wallboard 9 with score line 35 cut in its upper paper sheet 37. As in conventional gypsum wallboard, there is a core of set cementitious material 39 (gypsum with known additives) enclosed in adhered paper sheets 37 and 40. Wallboard 29 is secured to framing member 10 by a thin layer of adhesive 41. As can be seen in FIG. 5, score line 35 runs parallel to and along the centerline of framing member 10. It has been found that it is sufficient to score only the outer sheet 37 of the gypsum wallboard 29.

To provide for finishing the wall and lay a monolithic base for subsequent application of wallpaper or a paint coating, the score line 35 may be given a conventional joint treatment. Typically, this comprises applying a first layer of conventional joint compound, a paper tape or woven glass scrim 43 is embedded in the moist joint compound, and a finish or top coat 45 of joint compound is applied over the embedded tape. The finish coat is feathered until a smooth monolithic wall surface is achieved. This technique of applying a finishing joint treatment is well known and described in the art.

As an alternative procedure, the complete joint treatment may be omitted and a thin layer of a suitable adhesive, such as a polyvinyl adhesive or conventional joint compound may be used to keep the paper along the score line from peeling back from the gypsum core. A suitable finish coating may be applied over the entire wall surface.

While the score line 35, shown in FIGS. 4 and 5, is shown as a continuous cut through the outer sheet 37 to the core 39 from beginning to end, starting at the corner 33 proceeding to the edge 36 of the wallboard, it has been found, unexpectedly, that the score line may consist of a series of small perforations or cuts which are not interconnected, but are similar to the perforations which separate stamps in a sheet. This feature is shown in FIG. 7 in which the score line is illustrated by a series of small perforations. Disruptive forces will follow the score line and be relieved therein. Forces of excessive magnitude may result in a slight hairline crack along the score line. Without the score line, forces of

equal magnitude will cause extensive random cracking of the wallboard with ply separation of the cover paper. This latter condition requires extensive additional repairs. Thus, the term "score" is used in a broad sense and is not to be limited to "continuous cutting."

While details of the novel method have been described particularly with reference to window opening 18, score lines are connected to the corners 48 of door opening 15.

While the figures of drawings illustrate the score line as extending parallel to the center-line of the framing member, it may in fact extend horizontally from a corner of the opening to the nearest edge of the wallboard. It has been found to be easier to apply the joint treatment over a framing member although it need not be done solely in that manner. For this reason the preferred embodiment, the score line follows the centerline of the nearest framing member.

In summary there is shown a novel method and construction to control cracking in the construction of building walls.

I claim:

1. A method of relieving strains in a monolithic appearing wall comprising the steps of:
  - securing to framing members edge-abutting gypsum wallboard panels, each panel having a cover sheet, cutting openings having exposed corners in said gypsum wallboards.
  - scoring said cover sheets with scores extending from said corners of said openings to the edges of said wallboards, and
  - applying a cover material over said scores.
2. A method of relieving strains in a monolithic appearing wall as set forth in claim 1 in which said scoring in said cover sheet begins at an exposed corner of an opening and extends to a point over the center-line of an adjacent framing member and parallel to said center-line to the nearest edge of the wallboard,
3. A method of relieving strains in a monolithic appearing wall as set forth in claim 1 in which said scoring comprises a cut continuously through the cover sheet.
4. A method of relieving strains in a monolithic appearing wall as set forth in claim 1 in which said scoring comprises a perforated line through the cover sheet.
5. A wall structure comprising parallel spaced framing members secured in upright position, gypsum wallboard panels secured to said framing members; said gypsum panels comprising a set gypsum core and outer cover sheets adhered to said core, rectangular openings cut out of at least one of said panels; said rectangular openings having exposed corners; score lines cut in one of said outer cover sheets, leaving a continuous gypsum core behind and extending across said score line, said score lines extending from respective exposed corners of said openings to the nearest edges of the wallboard.
6. A wall structure as recited in claim 5 in which each of said score lines is a continuous cut in said outer cover sheet from said exposed corner to the nearest edge of the wallboard.
7. A wall structure as recited in claim 5 in which each of said score lines is a perforated line extending from one of said exposed corners to the nearest wallboard edge.

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