March 22, 1966 N. W. VANCE ETAL 3,241,276

GYPSUM WALLBOARD PANELS

Filed July 13, 1962

FIG. 1.

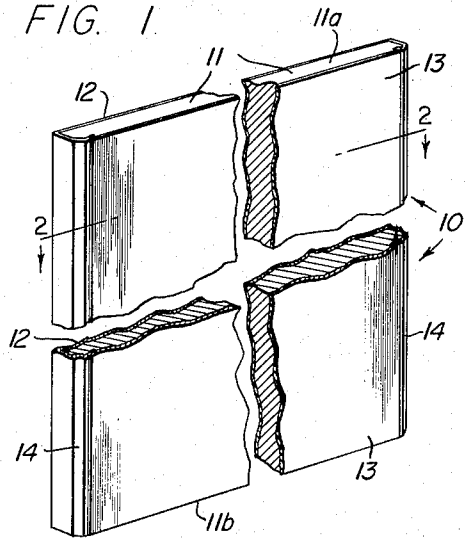


FIG. 2.

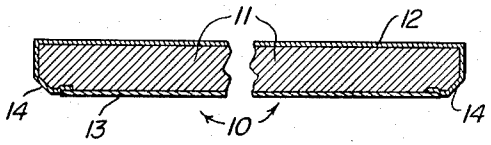


FIG. 3.

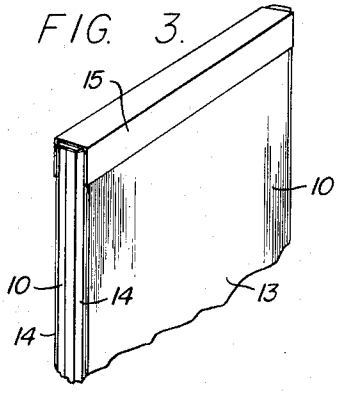


FIG. 4.

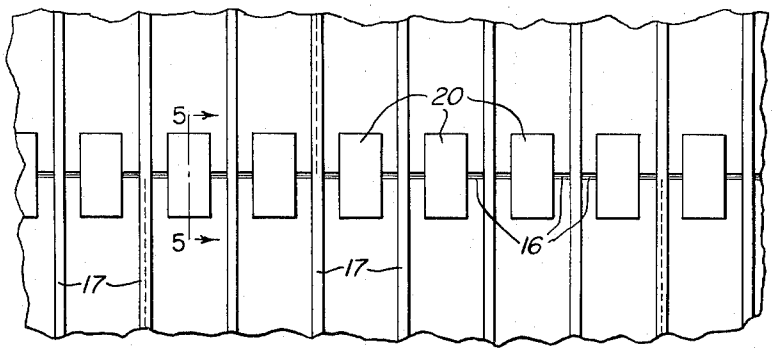
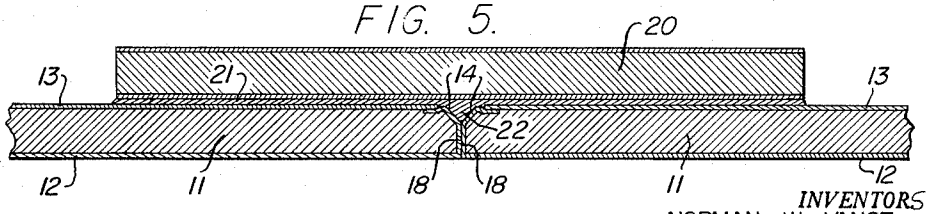


FIG. 5.



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GYPSUM WALLBOARD PANELS

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This invention relates to gypsum wallboard panels as articles of manufacture. It is also concerned with commercial bundles of such panels and with ceiling construction utilizing the panels.

Gypsum wallboard panels as customarily manufactured are of elongate rectangular formation. A slab of gypsum plaster composition is wrapped in heavy paper sheeting while the slab is still wet, resulting in close adherence of the sheeting to the slab and, after setting and hardening of the plaster, in a relatively strong and flexible building panel for use in place of plaster applied wet on the job.

At the ends of such a gypsum wallboard panel, the slab is usually not covered, but the paper sheeting does extend around and cover the longitudinal edge faces of the slab, which intersect both broad panel surfaces or faces of the slab perpendicularly. As so formed, difficulties have been experienced both in the handling of the panels and in their use in building construction.

Thus, it is customary to bundle two panels of the same size in face-to-face coextensive relationship and to secure them together in such relationship by paper tape adhesively applied along and about the end edge faces of otherwise exposed slab ends. The resulting bundles are marketed without further packaging. As such, they are not only awkward to handle, but their weight causes the right-angular edges to cut into the hands of those doing the handling. This is a source not only of annoyance but of actual injury in the frequent instances where many such bundles must be handled.

Again, it is customary to construct ceilings by applying and securing gypsum wallboard panels side-by-side against the undersurfaces of ceiling joists, e.g., the usual 2" x 4" lumber ordinarily used in home construction. The edge-to-edge joinders between the longer, side edges of the panels are usually located intermediate the spaces between joists and are secured by the spotting and bonding of relatively small pieces of wallboard over and to adjoining margins of the upper faces of the panels at spaced intervals along the lengths of the lines of joinder of such margins, so as to bridge such lines of joinder. The underface of each of these pieces of wallboard is coated with adhesive, so as to adhere firmly to the upper faces of the wallboard ceiling panels at opposite sides of the line of joinder between contiguous panels.

In order to obtain some adherence of contiguous longitudinal edge faces of adjoining panels, the adhesively coated backing or blocking pieces are usually placed in position on one of the panels which is already secured to the ceiling joists, and the other panel is slid into position beside it, the upper edge of the latter panel bearing against the adhesively coated undersurfaces of such backing or blocking pieces and scraping enough of the still plastic adhesive therefrom to provide some securement of the contiguous edge faces at intervals along the length of the line of joinder. Because these panels are purposely pressed tightly together along the line of joinder to insure a satisfactory finished appearance, it is not possible to effectively apply adhesive along such line of joinder following placement of the panels.

In practically all uses of these gypsum wallboard panels, some difficulty is encountered in obtaining flush and tight

joinders between adjoining panels because of slight longitudinal edge face irregularities.

Principal objects in the making of the present invention were to overcome these difficulties to a maximum extent.

In doing so, a principal feature of the invention is the beveling or chamfering of the longitudinal edges of one of the broad panel surfaces or faces of each wallboard panel. Because of the nature of the wallboard, this cannot be done on the job. It must be done by the manufacturer while the slab is still in plastic condition.

It has been found that this beveling or chamfering largely overcomes the aforementioned difficulty in handling commercial bundles of the panels if the beveled or chamfered broad panel surface or face of each component wallboard panel is outermost in the bundle.

It has also been found that this beveling or chamfering makes it possible to form a downwardly tapered recess extending along each line of joinder between adjoining wallboard panels in the aforementioned ceiling construction, if the beveled or chamfered broad panel surface or face of each of the panels is placed uppermost. Not only does such a recess serve to collect and funnel, into the interface zone between panel edge faces, excess adhesive scraped from the undersurfaces of the backing or blocking pieces, but it serves as a channel, coextensive with the line of joinder betweeen adjoining panels, for the reception of additionally applied adhesive in instances where it is desirable to have continuous adhesion between contiguous edge faces of adjoining panels.

Additionally, it has been found that tighter and smoother joinders between wallboard panels can be made in practically all phases of building construction, for example in the construction of walls where the lines of joinder extend along and intermediate the widths of respective studs, if the beveled or chamfered broad panel surface or face of each panel is at the back. The clearance afforded at the back of such a line of joinder and against the stud or other frame member apparently accommodates any bulging due to edge face irregularities when the panels are nailed tightly against the frame member.

In connection with all of the instances dealt with above, it should be noted that the wallboard panels are customarily manufactured with a backing sheet of inferior quality covering one broad surface or face thereof as a "back side," and with a fronting sheet of superior quality covering the opposite broad surface or face as a finish facing or "face side" for the reception of paint or other ornamentation. Inasmuch as the back sides of the panels are outermost in the commercial blndles, uppermost in the application of such panels to ceiling joists, and at the back in the application of such panels to studs and other frame members, it is the longitudinal edges of the back side of each panel, as customarily manufactured, which are beveled or chamfered.

There is shown in the accompanying drawing a specific embodiment of gypsum wallboard panel, commercial bundle thereof, and panel ceiling construction representing what are presently regarded as the best modes of carrying out the inventive concepts. From the following detailed description of these, other more specific objects and features of the invention will become apparent.

In the drawing:

FIG. 1 is a perspective view of a gypsum wallboard panel conforming to the invention, showing the back side and beveled edges of such panel, an intermediate portion of the length of the panel being broken out for convenience of illustration;

FIG. 2, a horizontal section taken on the line 2—2 of FIG. 1 and drawn to a considerably larger scale, an

intermediate portion of the width of the panel being broken out for convenience of illustration;

FIG. 3, a fragmentary top perspective view of a commercial bundle of two of the panels of FIGS. 1 and 2 in accordance with the invention, this view being drawn to a scale somewhat smaller than that of FIG. 1;

FIG. 4, a top plan view of a fragmentary portion of a ceiling construction in accordance with the invention, this view being drawn to a smaller scale than any of the previous views; and

FIG. 5, a fragmentary longitudinal section taken on the line 5—5 of FIG. 4 and drawn to the scale of FIG. 2.

Referring to the drawing:

The gypsum wallboard panel **10** of FIGS. 1 and 2 is fabricated in conventional manner to include a slab **11** of gypsum plaster composition covered at one of its broad panel surfaces or faces and along its longitudinal edge surfaces or faces with an adherent sheet **12** of relatively high quality heavy paper capable of taking paint or other ornamentation satisfactorily and at its other broad panel surface or face with an adherent sheet **13** of heavy paper of relatively inferior quality. The ends **11***a* and **11***b* remain uncovered.

The sheet **12** provides the so-called "face side" of the wallboard, while the sheet **13** provides the so-called "back side."

Not conventional is the provision of beveled or chamfered longitudial edges **14** at the back side of the panel.

The commercial bundle shown in FIG. 3 of two of the wallboard panels **10**, placed face to face in coextensive relationship with their back sides **13** outermost and firmly secured in such relationship by binder tape **15** adherent about and along the opposite ends of such panels, is conventional except for the beveled or chamfered longitudinal edges **14**. These overcome the former difficulty of sharp corners, which dig into and often cut the hands of those handling the heavy and unwieldy bundles.

The ceiling construction of FIGS. 4 and 5 is also conventional, except for the adhesive-filled channels **16** provided by contiguous beveled or chamfered edges **14** of adjoining wallboard panels **10**. Such panels are nailed or otherwise secured to ceiling joists **17**, with their back sides **13** uppermost and with their longitudinal edge faces **18**, FIG. 5, pressed tightly together. Spotted over the lines of joinder **19** at intervals along their lengths and between the ceiling joists **17** are the usual backing or blocking pieces **20**, which are customarily made by cutting up one or more of the wallboard panels **10**. There are secured to the back sides of the adjoining panels **10** by means of any suitable adhesive cement **21**, which is collected in the channels **16**, as at **22**, FIG. 5, and makes a well-bonded joint as indicated. In many instances it will be found desirable to fill channels **16** with the adhesive cement along their entire lengths.

It should be realized that the contour of the beveled or chamfered edges is subject to considerable variation from that shown without significantly affecting the utility thereof.

Whereas there are here illustrated and described certain specific forms of the invention which we presently regard as the best modes of carrying it out, it should be understood that various changes may be made and other forms adopted without departing from the inventive concepts particularly pointed out and claimed herebelow.

We claim:

1. Panel ceiling construction, comprising a series of ceiling joists; gypsum wallboard panels affixed to the underfaces of said joists in close side-by-side relationship, with adjoining edge faces thereof pressed tightly together at locations between said joists, the upper edges of said adjoining edge faces being beveled to form downwardly tapered channels extending along and leading into the respective interface zones between said adjoining edge faces; backing pieces overlying said panels at and bridging the lines of joinder between adjoining panels; and rigidly set adhesive bonding said backing pieces to the upper surfaces of said panels, with part of said adhesive disposed in said channels, the lower surfaces of said panels being covered with sheet material of good quality as a finish facing and the said upper surfaces thereof being covered with sheet material of relatively inferior quality as a back facing, the longitudinal edges of said lower surfaces of the panels being right angular.

2. The construction described in claim **1**, wherein the channels are substantially filled with the rigidly set adhesive substantially continuously from end to end thereof.

3. A gypsum wallboard panel of the type which comprises a gypsum slab of elongate rectangular formation having one broad panel surface thereof covered by sheet material of good quality as a finish facing and the opposite broad panel surface thereof covered by sheet material of relatively inferior quality as a back facing, said panel having the longitudinal edges of its back facing surface beveled and the longitudinal edges of its finish facing surface substantially right angular.

4. A commercial bundle of gypsum wallboard, comprising two gypsum wallboard panels of the same size positioned in mutually coextensive, face-to-face relationship, each of said panels being of the type which comprises a gypsum slab of elongate rectangular formation having one broad panel surface thereof covered by sheet material of good quality as a finish facing and the opposite broad panel surface thereof covered by sheet material of relatively inferior quality as a back facing and each having its back facing surface facing outwardly of the bundle and the longitudinal edges thereof beveled and having its finish facing surface facing inwardly of the bundle and the longitudinal edges thereof substantially right angular; and means securing said panels in said relationship.

5. A commercial bundle of gypsum wallboard as set forth in claim **4**, wherein the means for securing the panels in the specified relationship is binding tape adhesively bonded around and along opposite ends of the panels.

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