Nov. 24, 1959 D. L. RUGEN 2,913,776

METHOD AND MEANS FOR APPLYING PANELS TO A CEILING

Filed Sept. 4, 1957 2 Sheets-Sheet 1

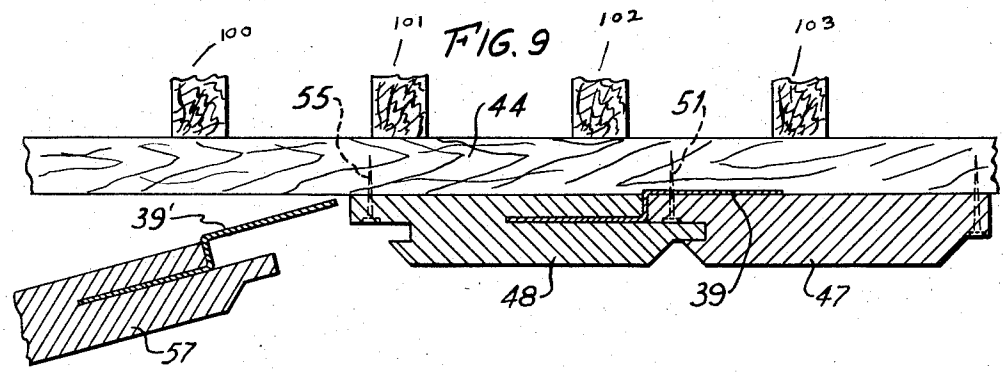



FIG. 9

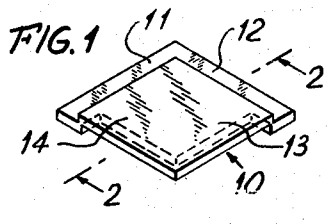



FIG. 1

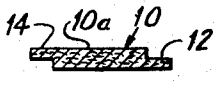



FIG. 2

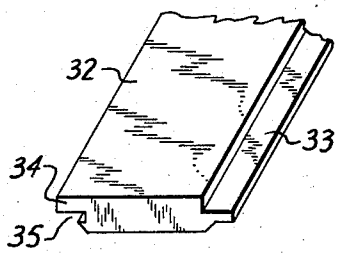



FIG. 3

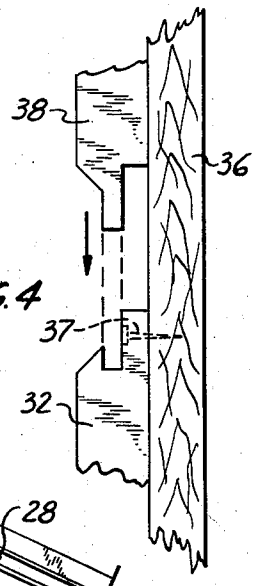



FIG. 4

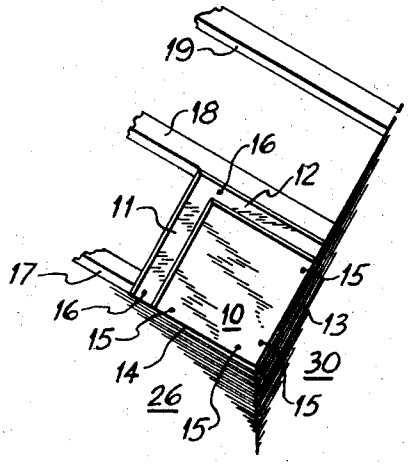



FIG. 5

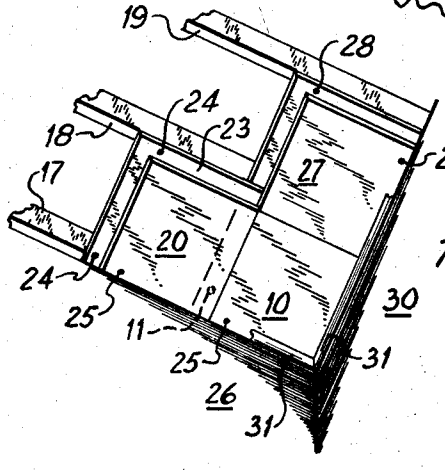



FIG. 6

INVENTOR
DANIEL L. RUGEN
BY Kane, Dalsimer and Kane

ATTORNEYS

Nov. 24, 1959 D. L. RUGEN 2,913,776

METHOD AND MEANS FOR APPLYING PANELS TO A CEILING

Filed Sept. 4, 1957 2 Sheets-Sheet 2

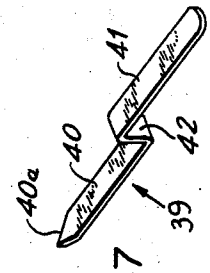



FIG. 7




FIG. 8

INVENTOR.
DANIEL L. RUGEN

BY Kanz, Dalsimer and Kanz

ATTORNEYS

United States Patent Office 2,913,776 Patented Nov. 24, 1959



2,913,776

# METHOD AND MEANS FOR APPLYING PANELS TO A CEILING

Daniel L. Rugen, Trumbull, Conn.

Application September 4, 1957, Serial No. 681,922

1 Claim. (Cl. 20—4)

This invention relates generally to panels for horizontal surfaces, and more particularly to a method and means for applying panels to a ceiling.

It is often desirable to apply panelling to walls and ceilings of a room to give an ornamental or functional effect. The panelling is applied after the structural members have been placed in position and is usually applied to the firring strips. For maximum decorative effect it is desired that no nails or other fastening means be visible so that upon viewing the completed panel, ceiling or wall, one sees only the panelling. In addition to the decorative effect, which can be achieved by the use of panelling, often insulating wall boards are used as panels to provide insulation within a room.

Pre-finished or factory finished panels providing blind nailing have not been used satisfactorily for ceilings or horizontal surfaces for various reasons, and the conventional types of insulating wall boards for vertical surfaces, which are applied in panels of varying lengths and widths, have not been applied to ceilings successfully.

Panels herein are defined as boards having rectangular cross section and rectangular surface areas.

Panels for vertical use are provided with means on their long sides whereby one edge of a panel can be pressed toward an adjacent panel edge to form a blind joint serving as a hiding flange for the adjacent nailed flange, and the other long edge of the panel can be nailed to the firring. This type of panel is not satisfactory for ceilings or horizontal surfaces inasmuch as the un-nailed edge of the panel, as a rule, does not receive sufficient support from the nailed edge of the adjacent panel to support the full panel weight. Thus, for such usage as in ceilings, exposed nails are required in order to prevent the ceiling panels from sagging, pulling apart and eventually dropping off.

In view of the difficulties involved, ceiling tiles or squares have been manufactured for horizontal surfaces. These ceiling tiles are provided with two adjacent edges formed for nailing or fastening to firring strips. The remaining two edges of each tile are formed for insertion in an adjacent tile to give a blind joint and conceal the fastening nails in the adjacent tile. These squares are put up individually, and therefore, applying this type of ceiling tile by tile, is obviously slow and difficult, as well as requiring wood firring strips which are parallel and properly spaced so that snug fitting joints and straight lines might be obtained. However, maintaining snug fitting joints in straight lines is very difficult, and individual tiles tend to sag and separate at the corner after application.

The invention herein disclosed has, as its principal object, the provision of a new method and means for applying panels to a ceiling or other horizontal surface.

Another object of this invention is to provide a method and means for applying panels to a ceiling in a fast and simple manner.

A further object of this invention is to provide a secure fastening method for edges of a panel applied to a ceiling



which will hold the panel securely in a horizontal position.

Still another object of this invention is the provision of a method and means for applying panels to a ceiling which will prevent the panels from sagging after they are up, and which will require no further nailing, and consequently will result in no visible nailheads.

Still a further object of this invention is the provision of a method and means for applying panels to a ceiling which will avoid all aligning difficulties and which does not require that the firring strips in the ceiling be parallel and equally spaced.

And, still another object of this invention is the provision of a method and means for applying panels to a ceiling which will be inexpensive and require little or no specialized skill or tools.

A method and means for applying panels to a ceiling in accordance with the teachings of my invention is described herein with references to the drawings in which:

Fig. 1 is a perspective view of a conventional ceiling tile of square configuration;

Fig. 2 is a sectional view taken along the line 2—2 in the direction of the arrows as indicated in Fig. 1;

Fig. 3 is a perspective view of a conventional wall panel or plank of the type which has heretofore been used for application to vertical surfaces;

Fig. 4 is a segmental view of wall panels applied to a vertical surface with the grooves running horizontally;

Fig. 5 is a segmental view of a ceiling with a conventional ceiling tile applied at the corner thereof;

Fig. 6 is a segmental view of a ceiling with several conventional ceiling tiles applied at the corner thereof;

Fig. 7 is a perspective view of the off-set metal fastener which is used to apply panels to a ceiling in accordance with the teachings of this invention;

Fig. 8 is a perspective view from above of panels applied to a ceiling in accordance with the teachings of this invention; and

Fig. 9 is a partially sectional view taken along the line 9—9 in the direction of the arrows as indicated in Fig. 8.

A conventional ceiling tile of square configuration is shown in Figs. 1 and 2 and designated generally by the numeral **10**. Tile **10** has a nailing flange or blind nailing surface extending from two adjacent sides. As shown in the figures, nailing edges **11** and **12** extend from adjacent sides of tile **10**, and the remaining two adjacent edges of the tile are provided with a second flange or over-edge which forms an extension of surface **10***a* of the tile. This extending portion is designated by the numerals **13** and **14**. Extending edge **14** can be seen best in Fig. 2.

In applying ceiling tile **10** to a ceiling, edges **13** and **14** as shown in Fig. 5, are placed adjacent the two intersecting walls at the corner of a room, and nails **15** are applied along these edges. The nailing tongues **11** and **12** are then fastened by means of nails **16** to firring strips **17** and **18**. Firring strips **17**, **18** and **19** are wooden strips which are spaced at fixed intervals along the ceiling and are maintained substantially parallel to one another.

Ceiling tile **20** is then placed into position with its over-edge **21** covering nailing tongue **11** of tile **10**. Nails are applied to nailing tongues **22** and **23** of tile **20** in order to firmly fasten it to firring strips **17** and **18**. In Fig. 6 the nails used to fasten tile **20** to firring strips **17** and **18** are designated generally by the numeral **24**. In addition, nails **25** are applied along the edge of tile **20** which is adjacent wall **26**.

In like manner, tile **27** is applied with nails **28** fastening it to firring strips **18** and **19**, and nails **29** are applied at the edge adjacent wall **30**.

In Fig. 6 it is observed that with these three ceiling tiles in position the nailing tongues of tiles **20** and **27** are ex-

posed, but the nailing tongues of tile **10** are covered. The only nails visible, besides the nails visible at the nailing tongues, are covered by wood molding along the edges of the walls. The wood molding is designated in the figures by the numeral **31**. This molding then covers nails **14**, **25**, **15** and **29** so that they are no longer exposed to view.

Other ceiling tiles identical with tile **10** are applied in like manner until the ceiling is completely covered with these tiles. Wood mold **31** is extended about the periphery of the ceiling covering all edge nails so that no nails are exposed to view upon completion of the application of the tiles to the ceiling.

Although a nice, neat appearance can be achieved with these conventional ceiling tiles, it is necessary for this neat appearance that the firring strips be equally spaced and be substantially parallel to one another. Since it is difficult to erect firring strips exactly parallel to one another and exactly equally spaced from one another, maintaining snug fitting joints between tiles and straight lines is very difficult and often impossible. And, in addition, the individual tiles tend to sag and separate at the corners after application. As viewed in Fig. 6, edge **21** of tile **20**, for example, will have no supporting nails and eventually will sag, causing the corners thereof to sag.

Because of the many problems encountered in using ceiling tiles of this conventional type, and because of the great amount of labor involved in placing them in position one tile after another, attempts have been made to apply the techniques and materials used in covering vertical surfaces to the covering of horizontal surfaces and ceilings.

In Fig. 3 panel **32** is shown and the nailing tongue thereof is designated by numeral **34** with the covering tongue designated by the numeral **33**. This panel can be supplied in varying lengths and widths and can be provided with groove **35** to receive covering tongue **33** to provide for a blind joint in order to conceal fastening nails. An application of panels of this type to a vertical surface is shown in Fig. 4 whereat the groove of the panel is running in a horizontal direction. Panel **32** is fastened to firring strips **36** by nails **37** running through nailing tongues **34**. A second panel board **38** is positioned so that covering tongue **33** is inserted into groove **35** and conceals nail **37**.

As shown in Fig. 3, a panelled ceiling is formed of a plurality of interfitting adjacent long and narrow rectangular panels and a plurality of spaced firring strips extending transversely to the long dimension of the interfitting panels. Each of the said panels is adapted to interfit along both opposite long edges in tongue and groove relation to an adjacent panel with one of the long edges constituting a blind nailing tongue formed as a longitudinally projecting edge coplanar at its upper surface with the surface of the panel for nailing to the firring strips.

The blind nailing tongue is of substantially lesser thickness than the thickness of the panel with a horizontal inner face parallel to the coplanar surface. The covering tongue is of substantially lesser thickness than the thickness of said panel and is rabbeted inwardly from both upper contacting and lower exposed surfaces of the panel to form a horizontal inner tongue surface complemental to the nailing tongue and for covering the nailing tongue. This horizontal outer tongue surface is partially exposed at the lower face of the panel. The outer vertical lip of the covering tongue is adapted to abut the rear inner surface of the groove at the inner horizontal face of the blind nailing tongue of an adjacent panel. The inner vertical lip of the covering tongue abuts the outer vertical edge of the nailing tongue of an adjacent panel.

The integral rigid Z-shaped hanging element comprises an intermediate vertical web portion in face-to-face contact on one side with the outer vertical edge of the blind nailing tongue and on the other side with the vertical edge of the rabbeted surface of the interfitted covering tongue of an adjacent panel, a first leg portion which is pointed at its end to inwardly pierce and extend into the adjacent panel in alignment with the horizontal inner covering surface of the covering tongue and a second leg portion extending in a direction opposite to the first leg portion which lies in face-to-face contact with the concealed face of the panel at the interlocking edge thereof.

This type of panel, if applied to a ceiling or horizontal surface, would eliminate the necessity of using small squares and this long board could be used to cover a large surface with one installation. This type of panel heretofore has not been satisfactory, however, for ceilings or horizontal surfaces since the un-nailed edge of the panel has not received sufficient support from the nailed edge of the adjacent panel to support the full panel weight.

The invention herein consists in the provision of a panel, as opposed to the smaller ceiling squares or tiles, for use on horizontal surfaces or ceilings. A secure fastening method for the un-nailed edge has been devised to hold the panel securely in a horizontal position. This fastening, at the same time, maintains the feature of blind or hidden nailing. Covering a surface with panels is of course much faster and easier than covering a surface with individual tile squares. The panels assure more accurate alignment. Sagging corners, which eventually occur in the case of conventional ceiling squares are eliminated with the use of the ceiling panels in accordance with the method and means for applying these panels to a ceiling or other horizontal surface as described herein.

In order to provide the fastening required for the un-nailed edge of the panel when it is applied to a horizontal surface, I have devised and used an off-set metal hanger such as that shown in Fig. 7. The off-set hanger shown in Fig. 7 is designated generally by the numeral **39** and consists of a member formed from metal or other rigid material having two substantially parallel flat surfaces at either end designated **40** and **41**. Thus it is seen that surface **40** is maintained separate from and parallel to surface **41** by means of intermediate surface **42** resulting in a construction whereby surface **40** is lying in a different plane than surface **41**. One end of surface **40** is fashioned with a point **40***a*.

Figs. 8 and 9 will be considered now in connection with the method and means for applying panels to a ceiling which I have devised and the manner of using the off-set metal hanger **39** will be readily explained. In Fig. 8 which is a perspective view from above of panels applied and being applied to a ceiling in accordance with my invention, firring strips **43**, **44**, **45** and **46** are shown attached to ceiling joists **100**, **101**, **102** and **103**, and panels **47** and **48** are attached to the horizontal surface by means of these firring strips. Panel **47** is the starting panel and its edge **47***a* can be considered as being adjacent a wall of the room. Panel **47** is positioned and maintained in position by means of nails **49**, **50**, **51** and **52** which are driven into firring strips **46**, **45**, **44** and **43** respectively, and rigidly fasten the nailing tongue of panel **47** to these firring strips. Also, of course, edge **47***a* of the panel is nailed to the firring strips. Off-set metal hangers **39** are applied to panel **48** by means of insertion of point **40***a* and surface **40** therein by sliding surface **40** upon edge **48***a*.

Panel **48** is maintained in position by means of nails **53**, **54**, **55** and **56** which are driven in firring strips **46**, **45**, **44** and **43** respectively, and by means of the off-set metal hangers **39**. Panel **57** is shown being positioned as a third panel in the set. It has applied thereto off-set metal hangers **39'** and portion **41'** of the off-set metal hangers **39'** is shown being inserted above panels **48** in order to maintain edge **57***a* of panel **57** in position and supported thereby.

Without the off-set metal hanger, the weight of the panel would cause a break to occur at the point of junction whereat the panels join. It is seen, therefore, that after the ceiling has been placed in position, the off-set metal hangers which support adjacent edges of the panels are blind or hidden and the off-set metal hangers have been inserted into or fastened to only one edge of one panel. They are not fastened in any way to the adjacent panel or to firring strips or other supporting members. Thus the off-set metal hanger can be inserted by hand on the floor prior to attaching the panel to the ceiling, and it is unnecessary for the firring strips to be substantially parallel to one another and equally spaced since the off-set metal hangers can be positioned at any place and the nailing edge of the panel can be nailed to the firring strip at any point at which it becomes adjacent thereto.

It is seen with this arrangement that the off-set metal hanger gives support so that panels can be mounted horizontally in accordance with the teachings of this invention. The off-set metal hangers are inserted in one panel and hung on another and that panel itself is nailed. Where ceilings are put up diagonally, for eye appeal, every firring strip would have to be parallel and at the correct angle for use with the ceiling tiles of square configuration, whereas with the method and means which I have provided, the panels can be put up diagonally across the ceiling no matter what the relationship of the firring strips are to one another and the ceiling itself.

It should be understood that this invention is not restricted to panels alone. This method can be applied to ceiling members of various configurations and the panels could be marked so that they are cross-grooved to give the appearance of tiles.

Thus, among others, the several objects in the invention as specifically aforenoted, are achieved. Obviously, numerous changes in construction and re-arrangement of parts might be resorted to without departing from the spirit of the invention as defined by the claim.

I claim:

A panelled ceiling comprising a plurality of interfitting adjacent long and narrow rectangular panels and a plurality of spaced firring strips extending transversely to the long dimension of said interfitting panels to which said panels are nailed along one edge thereof, each of said panels being of substantially equal thickness and being adapted to interfit along both opposite long edges in tongue and groove relation to an adjacent panel, one



of said long edges constituting a blind nailing tongue being formed as a longitudinally projecting edge which is coplanar at its upper surface with the surface of the panel for nailing to the firring strips, said blind nailing tongue being of substantially lesser thickness than the thickness of said panel and having a horizontal inner face which is parallel to said coplanar surface, said panel being provided with a longitudinally extending groove adjacent said horizontal inner face for receiving a covering tongue of an adjacent panel, the other of said long edges constituting a longitudinally projecting covering tongue for overlying the blind nailing tongue of an interfitted adjacent panel, said covering tongue being of substantially lesser thickness than the thickness of said panel and being rabbeted inwardly from both upper contacting and lower exposed surfaces of the panel thereby forming a horizontal inner tongue surface complemental to said nailing tongue for covering said nailing tongue and a horizontal outer tongue surface which is partially exposed at the lower face of the panel, the outer vertical lip of said covering tongue being adapted to abut the rear inner surface of the groove at the inner horizontal face of the blind nailing tongue of an adjacent panel and the vertical edge of the rabbeted surface of said covering tongue abutting the outer vertical edge of the nailing tongue of an adjacent panel, an integral rigid Z-shaped hanging element having an intermediate vertical web portion in face to face contact on one side with the outer vertical edge of the blind nailing tongue and on the other side with said vertical edge of the rabbeted surface of the interfitted covering tongue of an adjacent panel, said Z-shaped hanging element having a first leg portion which is pointed at its end which inwardly pierces and extends into said adjacent panel in alignment with said horizontal inner covering surface of the covering tongue of said adjacent panel and a second leg portion extending in a direction opposite to said first leg portion which lies in face-to-face contact with the concealed face of the panel at the interlocking edge thereof whereby a plurality of said hanging elements supports a given panel from an adjacent panel.

**References Cited** in the file of this patent

UNITED STATES PATENTS

| | | |
|---|---|---|
| 2,065,525 | Hamilton | Dec. 29, 1936 |
| 2,109,448 | Welch | Feb. 22, 1938 |
| 2,341,645 | Muench | Feb. 15, 1944 |