May 20, 1941. M. R. PRICE 2,242,834

WALL OR CEILING TREATMENT

Filed Nov. 4, 1938

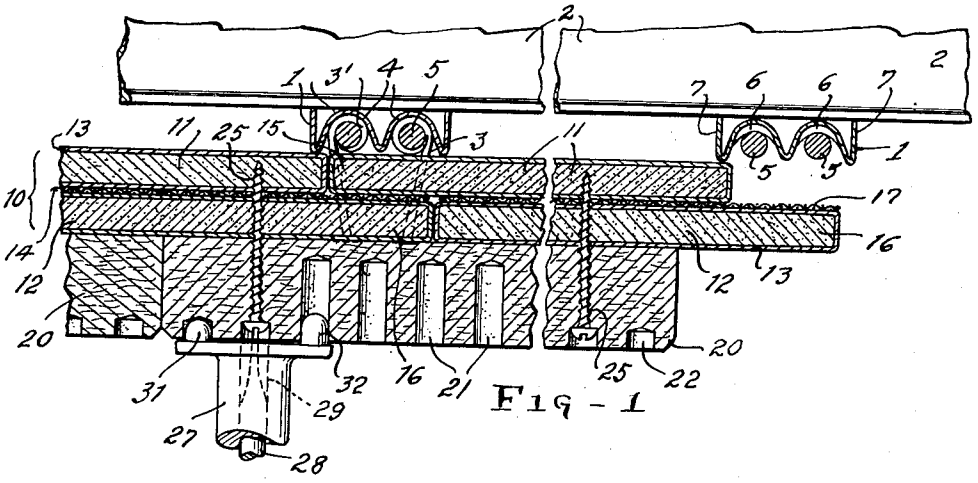


Fig - 1

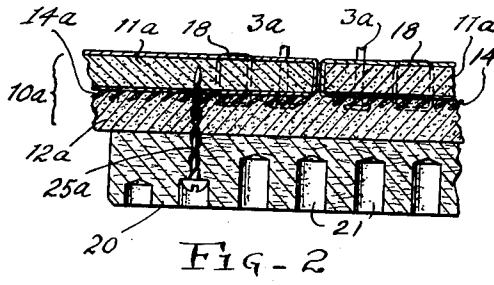


Fig - 2

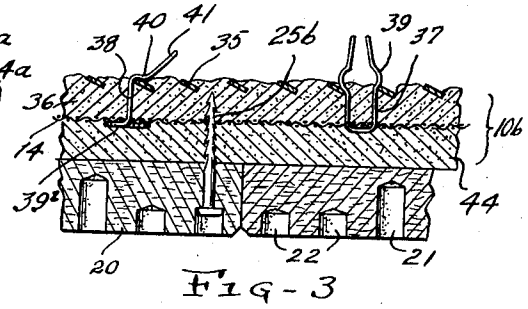


Fig - 3

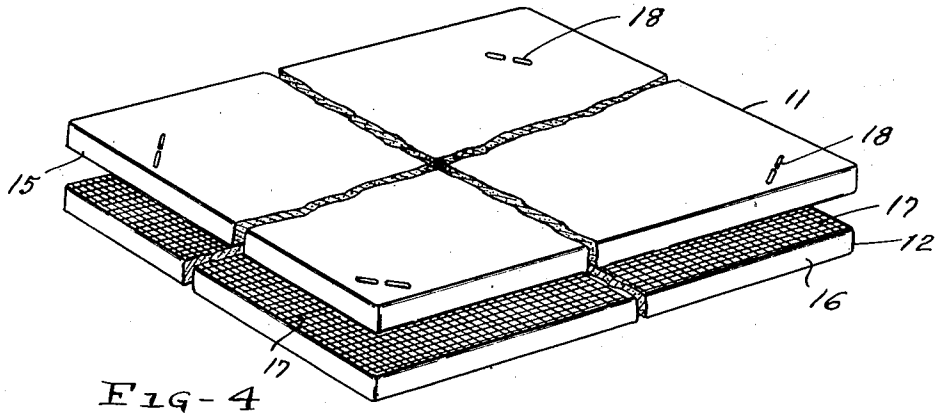


Fig - 4

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Patented May 20, 1941

2,242,834

UNITED STATES PATENT OFFICE

2,242,834

WALL OR CEILING TREATMENT

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Application November 4, 1938, Serial No. 238,863

4 Claims. (Cl. 72—118)

This application is a continuation in part of my prior application Ser. No. 203,046, filed Apr. 20, 1938; now Patent No. 2,160,794, issued May 30, 1939. An object is to provide an improved system of fastening securely into place wall facing members such as acoustical tile.

A more specific object is to provide a composite ground or backing to which such tile or other wall facing members can be more securely fastened than has been the practice in most cases, but without disproportionately increasing the cost of the entire treatment.

A further object is to provide a continuously sealed support or backing to which facing members such as tile can be securely fastened by nails or screws having lateral projections thereon such as threads or barbs, and an inexpensive method of installing such support or backing.

Other objects and the advantages of the construction and arrangement shown will become apparent from the following description of the illustrated exemplary embodiments of the invention:

In the drawing, Fig. 1 is a fragmentary sectional assembly view of a suspended ceiling construction incorporating an embodiment of the invention; Figs. 2 and 3 are sectional views showing modified forms of backing units for acoustical tile and the like, and Fig. 4 is a fragmentary perspective view showing the four corner portions of the backing unit according to Fig. 1.

Referring to Fig. 1, the upper part of this view illustrates a nailing ground which is shown and claimed in my said patent. This comprises double channel ground strips 1 supported as by suitable clips or tie wires in parallel relation to each other on the under sides of bars 2, such as structural channels customarily used in suspended ceiling construction. The above constitutes a wall framework and so far as the present invention is concerned, the wall may be vertical or horizontal, or otherwise disposed.

The ground strips are of special shape and adapted to clinch nails such as 3, when driven through members to be fastened (e. g. units 10 to be described presently), and which in order so to be clinched, can encounter the strip at any point across the face of the strip which is exposed in a direction normal to the wall, and when driven at various angles. Instead of the special nailing ground of the suspended ceiling shown, the units 10 may be nailed to rafters or studs, or over any wall covering.

In the preferred construction of ground strips 1, the individual channels 4 have rods 5 supported between their side walls and in spaced relation to their bottoms as by being welded to outstruck portions 6 disposed at intervals along the channels. The nails 3 are like horse-shoe nails at their shank portions, i. e. flat and gradually tapered so that they will readily be bent in the proper direction by engagement with the sloping walls, and will curl around the rods as at 3'. Preferably, the shanks of the nails are round, so that when driven through wood, for instance, there is less tendency to split the wood than if the necessarily larger shank portions were also of elongated rectangular section. The ground strips have reversely bent flanges 7 at their sides, and these flanges cooperate with the channels to form base supports and stiffeners for the strips.

The units 10, as shown, (Figs. 1 and 4) comprise conventional plaster board or lath sections 11 and 12 with paper envelopes 13 of suitable paper stock, and with gypsum cores. Between the boards or layers 11 and 12 are normally flexible and relatively thin web-like members 14, for instance, open wire fabric of a mesh slightly finer than fly screen. The layers or boards 11 and 12 are preferably offset from each other diagonally as suggested in Fig. 4, so that overhanging and underhanging tongues 15 and 16 are provided respectively on two edges of the unit, permitting erection essentially in the manner of ship-lap boards. The labyrinth joint, which may take other forms than as shown, is important in order to prevent dust from coming through to the outer face of the unit and defacing the exposed surface of the treatment.

The lapped joints by reason of prearrangement of the ground strips occur at the strips substantially as illustrated in Fig. 1, so that two nails, one in each channel, will each penetrate portions of both adjacent units 10. The webs 14 may extend over the tongues, or any desired portions of them. As shown in Fig. 1, the web material stops at the beginning of the overhanging tongue, but continues entirely across the face of the underhanging tongue, as at 17, Figs. 1 and 4.

The material for the web 14 is selected in accordance with the type of fastener which is to coact with it. Metal fabric has been found to have good anchoring power with ordinary nails, barbed nails, drive screws, and ordinary screws. The fabric may be of vegetable fibers, and, if necessary, toughened and hardened as with thermal setting or thermal-plastic materials commonly referred to as plastics. Cellulose acetate is an example suited to the purpose, and sheets of this and materials of comparable tensile strength may

be used. Moreover, the web can be sheet metal; preferably expanded metal as illustrated in Fig. 2 at 14*a*, particularly if the fasteners are screws.

The units 10 may be secured together by adhesive which, in event of using a reticulate material for the web 14, passes through the voids and permits direct bonding with both layers 11 and 12 of the unit. Instead, or additionally, the members forming the units can be fastened or stitched together as by wire staples 18, such as commonly used for binding paper sheets.

Other kinds of wall board material normally incapable of firmly holding the shanks of fasteners such as nails or screws when driven thereinto in the usual manner can be used for the layers 11 and 12, and more than two layers can be used in each unit. The plaster board is preferred, because of its low cost, its inherent rigidity, unlikelihood of buckling and creeping, and because it serves as a fairly effective fire stop. Moreover, it is an easy matter to penetrate the outer layer with nails or screws, and the paper (usually chipboard) envelope assists in retaining such fasteners. One layer can be of one material, and the other layer or layers of another, or other wall board materials normally incapable of holding nails or screw shanks.

The facing treatment shown comprises the Acousti-Celotex type of tile 20. These have closely spaced holes 21 for nearly their full thickness leading inwardly from the exposed faces, and distributed evenly over such faces. At the corners, as now made, a few of the holes 22 are shallower than the others, to provide for practical concealment of nail or screw heads, while leaving enough material under the head to make certain that the latter will not pull or be driven through. The tile may be fastened by adhesive, as usual, or merely nailed or screwed onto the improved ground as indicated. The fasteners 25 in Fig. 1 are ordinary wood screws; that in Fig. 2, at 25*a*, representing a helical nail or "drive screw," and that in Fig. 3, at 25*b*, representing a barbed nail. The fasteners have pointed shanks adapted to pierce the outer layers or face portions of the respective units 10, 10*a* and 10*b* and the web 14, or 14*a* and interlock with said web by reason of lateral projections on said shanks laterally overhanging adjacent portions of the web. The interlock with the web 14 or 14*a* is highly effective in each case.

To assist in guiding the fasteners into place, a tool such as shown in Fig. 1 at 27 can be used to advantage for Acousti-Celotex and can be appropriately modified to serve effectively in securing other forms of facing. This represents a guiding head for a screw driver shaft 29 which is slidable and rotatable in an axial bore in the head. Arms 30 on the head have short pins 31 and 32 for aligning the working axis of the screw driver with the opening in which it is desired to drive the fastener. The shaft may be driven by hand in a variety of ways, or by power in the event more rapid operation is desired. The free ends of the fasteners can be guided into place by yieldingly retractable positioners (not shown) within the head, and which are moved out of the way of the enlarged head of the fastener by engagement of such head therewith.

Fig. 2 shows only one layer of plasterboard 11*a* (can be other wall board material) prefabricated (before attachment into place on the building) with the web material, as 14*a*, adapted for engagement with the nails or screws which secure the facing treatment, such as 20. Such pre-fabricated portion of the backing can be secured in place on building members, such as rafters, studs or special ground members, say as illustrated at 1 and 2, Fig. 1, nails 3*a*, partially shown, serving the purpose. The web material 14*a* can be fastened to the sections of board 11*a*, as by staples 18 or stitching or adhesive, and the fasteners 3*a* are driven through the web and the board material as indicated. The above procedure and pre-fabricated arrangement of elements afford an effective plaster base, and the backing can be completed by an application of plaster as at 12*a* which bonds to the board material 11*a* through the interstices of the web 14*a*. This results in fully sealing the backing against "breathing" and infiltration of dust, and the plaster can serve as the exposed wall finish, the whole embodying an excellent nail or screw hold for subsequent application of facing treatment of any nature (e. g., moldings, pictures, etc.) thereto by means of appropriate nails or screws. The web material at 14*a*, while shown as of the expanded metal type, can be woven fabric or any of the alternatives described above for the web 14 of Fig. 1.

Referring further to Fig. 3, 35 denotes any suitable ground for plaster, such for example, as expanded sheet-metal lath. This can be wired onto the members such as 2, or studs in the case of a vertical wall (or nailed on, if the studs or skeleton structure are wood). The plaster is keyed through the openings in the metal lath, as usual.

In accordance with this modification of the method, a bond coating of plaster 36 is applied to the expanded metal lath, and then before the bond coating has set, a wire screen or other tough fabric web 14 is laid on the plaster and secured simply by pressing it into the plaster or by means of clips, such as shown at 37 and 38. The clips 37 may be in the nature of wire or flat strip staples having diverted portions 39 adapted to act as shoulders beyond the openings of the expanded metal in order to hold the core material in place until the plaster of the bond coat has set. The fastener shown at 38 has a T-head 39' and single shank at right angles thereto which has a hook portion 40 to engage the metal lath, and, beyond the hook, a diagonally extending free end 41 by which the fastener is first inserted into the plaster and through the openings in the metal lath. After such insertion, the fastener is moved to the position shown, and, if necessary, turned about the axis of the shank portion adjacent the T-head or moved about in the wet plaster until the hook effect is felt to be in engagement with the metal lath at one edge of the opening through which inserted.

The fabric web or core material 14 assists in forming a firm bonding between the finish coat 44 of plaster and the bond coat 36. The tiles or other facing members are attached to the nail or screw-holding ground, formed as above described, in any of the ways above indicated.

I claim:

1. As a wall or ceiling treatment, the combination of a wall covering unit in sheet form, comprising mutually superposed layers of material of relatively rigid but frangible character adapted to be pierced readily by fasteners such as nails or screws when driven thereinto but incapable of firmly holding the same against being withdrawn therefrom and a relatively thin, normally flexible core web embraced be-

tween and operatively reinforced on opposite sides by said layers, said web having sufficient toughness and tensile strength to hold such fasteners when penetrated thereby and, when so reinforced by said layers, capable of being readily pierced by the fasteners over substantially its entire area without movement generally out of its normal plane, facing members substantially in edge to edge relationship overlying the unit on one side thereof, and fasteners such as nails or screws with shanks having lateral projections thereon, said shanks extending through the adjacent layer of said material into piercing relation to the web and with the projections in interlocking relationship thereto, said fasteners having heads in retaining relation to the facing members for holding the latter tightly against the unit.

2. A wall or ceiling treatment according to claim 1, wherein said unit comprises preformed wall board sheets and the nail or screw holding web comprises wire mesh.

3. A wall or ceiling treatment according to claim 1, wherein one of said superposed layers comprises a preformed wall board sheet, means to secure the web to said sheet, the other layer comprising plaster applied over the web and bonded to the web.

4. A wall or ceiling treatment according to claim 1, wherein both said layers comprise plaster, and the web comprises a wire mesh core between the two layers of plaster.

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