Nov. 18, 1941. O. A. MECHLIN 2,262,899

WALL PANEL

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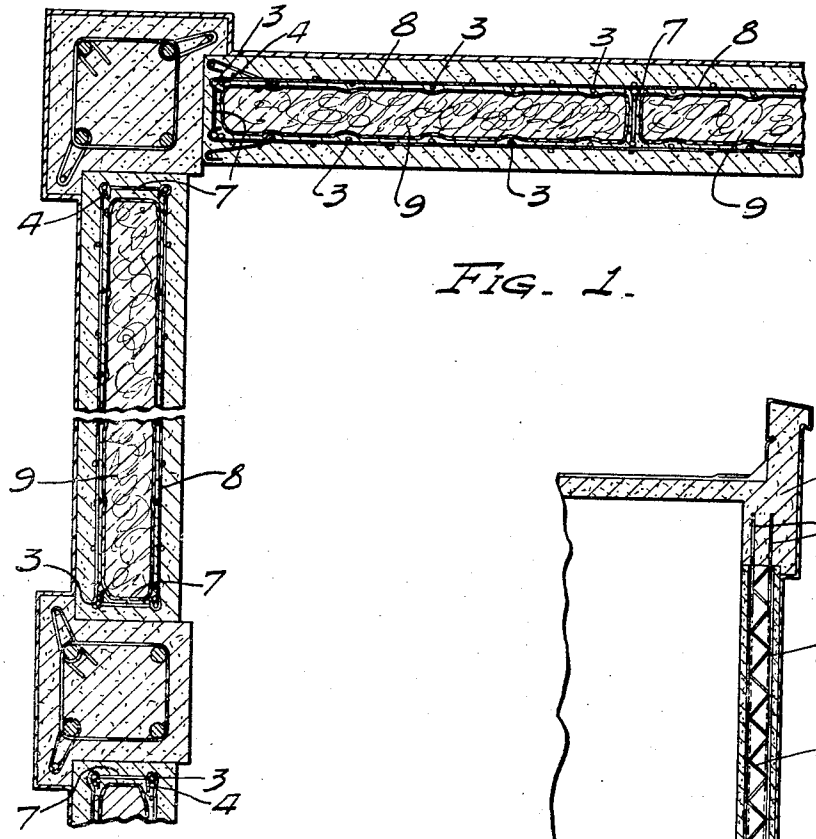


FIG. 1.

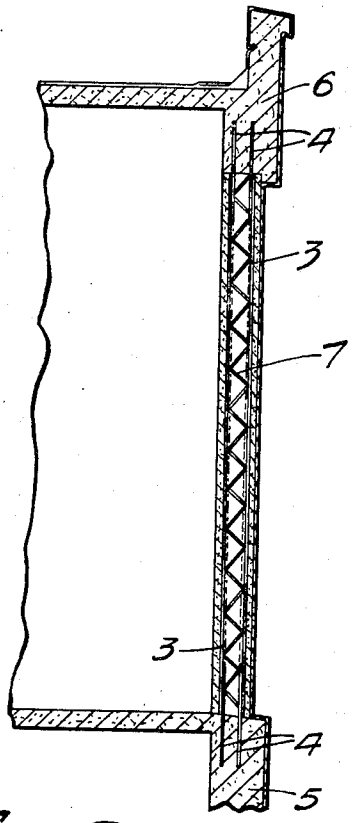


FIG. 2.

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WALL PANEL

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3 Claims. (Cl. 72—16)

The invention relates to a method of forming a reinforced concrete wall panel and to a method of connecting said wall panel to the framing structure surrounding the same.

The principal object of the invention, generally considered, is to provide a simple, inexpensive and practical means or method of forming in situ a wall panel so constructed and arranged as to provide a satisfactory wall portion having adequate strength to resist lateral pressure and of high insulating value in proportion to its thickness.

To these and other ends the invention consists of the various steps as hereinafter set forth, the novel features thereof being pointed out in the claims forming a part of this specification.

In the drawing:

Figure 1 is a horizontal cross section showing the completed wall panel assembled with framing or column members which for convenience are illustrated as also being composed of reinforced concrete.

Figure 2 is a vertical cross section through a wall panel showing the reinforcement between the structural members and showing the panel positioned in reference to a floor and roof construction.

Throughout the specification and drawing like parts are designated by like reference characters.

In the construction of buildings there are provided both vertical column members and horizontal beam members, the beam members being connected to the column members and forming the foundation for the wall portions which are of course connected to both the overlying and underlying beam members and so related to the column members as to afford at their juncture an air and water tight connection.

The wall panel forming the subject matter of this invention comprises a plurality of rows of vertically extending laterally spaced structural members which may be, and preferably are, round bars typical of reinforcing bars used in connection with concrete structures. The series of structural members are illustrated in Figure 1 and designated by the reference character 3. These structural members are connected at top and bottom to dowels or pins 4 which have been previously formed or connected to the horizontally extending beam members 5 and 6. Certain adjacent pairs of structural members 3 are then connected by the diagonal reinforcing or latticing shown most clearly in Figure 2 and designated by the reference character 7. It will, of course, be understood that the structural members 3 are connected to the respective dowels by being wired or otherwise suitably secured. After the structural members have been positioned and certain of the inner and outer members are connected by the reinforcement which it might be stated can be applied either after the members are in position or prior thereto, as desired, there is placed on the outer face of the outer row of structural members and rigidly connected to each a foraminous sheet which may be either continuous for the width and height of the wall panel or in sections as desired. This foraminous sheet is indicated by the full lines in Figure 1 and is designated by the reference character 8.

After the foraminous sheet 8 has been positioned and secured there is inserted between each connected pair of the structural members 3 a blanket of compressible insulating material which may be and preferably is formed of glass wool, as indicated by the reference numeral 9, although it is to be understood that other types of insulation, such as rock wool, asbestos, Celotex, or the like, may be employed if desired. In the event that the type of insulation utilized is of moisture absorbing fiber, it is essential that the outer and inner faces of the blanket be covered with a coating which is substantially impervious to moisture, such as asphaltic paper, and it is considered good practice to also encase the blanket of glass wool, rock wool, or the like, in a wrapper envelope which may be wire mesh, such as chicken wire or the like, if desired.

It will be understood that the glass wool blanket is of greater thickness than the distance between the foraminous sheet applied to the outer row of structural members and the plane of a similar foraminous sheet applied and rigidly connected to the outer faces of the inner row of structural members so that the glass wool or other insulating blanket is slightly compressed by being confined between the two foraminous sheets.

After the completion of the operations hereinbefore described I apply to both the inner and outer foraminous sheets a cementitious compound preferably of the character generally known in the trade as Gunite. This material is a mixture of Portland cement, sand and/or gravel and water, the said mixture being applied to the foraminous sheets by being projected thereon at high velocity by compressed air flowing through the nozzle which is piped to said mixture, and compressed air forcing the cementitious material to the nozzle under high velocity and causing the

same to impinge upon the foraminous sheet. The force or pressure under which the cementitious material is applied causes a further compression of the insulating blanket, permitting the cementitious material to pass through the foraminous plate or screen and to thereby afford a coating on both sides of the plate or screen, which coating also embraces and surrounds the structural members. A similar operation is performed on the inner face of the wall panel and by these two operations there is provided a panel having spaced vertical cement walls in each of which is embedded the adjacent plate or wire mesh and in each of which is also embedded the vertical structural members associated with the foraminous sheet or plate. The panel being formed in situ is, by the method hereinbefore described, made an integral and essential part of the building construction and, as hereinbefore stated, possesses ample strength against lateral deformation due to wind pressure and the like.

If it is desired there may be applied to the outer face of the wall panel a finished coat of colored cement or otherwise treated cement for decorative purposes.

While I have described my invention and the application thereof to a building in situ, it will, of course, be evident to those skilled in the art that this panel may be prefabricated and then secured to the dowels, and the intervening spaces filled with cement by the method described or in any other desired or preferred manner.

It is therefore to be noted that where in the appended claims I refer to a wall panel I intend to include such panel formed either in situ or prefabricated as desired.

It will be seen from the foregoing description and the accompanying drawing that each wall panel is provided with spaced wall members having interposed therebetween insulating material, the insulating material being protected from attack by the elements and serving also to prevent the transfer of heat or cold from one wall to the other.

Having now described the invention and a preferred method of the construction of the same, what I claim is:

1. The method of forming a wall panel which comprises securing to adjacent faces of a pair of horizontally extending beams a plurality of spaced pairs of laterally spaced structural members forming two spaced rows, connecting at vertically spaced points certain of said pairs of said structural members, securing to the outer faces of one row of structural members a foraminous sheet, interposing between each pair of connected structural members and said foraminous sheet an insulating blanket, enclosing and compressing said blanket by securing to the outer faces of the other row of structural members a foraminous sheet, and finally embedding in cementitious material each of the said sheets and the adjacent structural members positioned on opposite sides of each blanket.

2. The method of forming in situ a wall panel which consists in forming in the adjacent faces of a pair of superposed beams two longitudinally extending rows of projections, connecting a series of structural members to said projections of each beam, each structural member being connected at opposite ends to one projection in each beam, connecting certain of the structural members of each row to the opposite structural member of the other row by lattice reinforcing means, connecting an expanded metal sheet to the outer faces of one row of structural members, interposing between each pair of connected structural members and in contact with the said sheet a blanket of insulating material, compressing said material by connecting to the outer faces of the other row of structural members a like reinforcing sheet, and finally impinging cementitious material upon said sheets with sufficient force and velocity to embed in said cementitious material the said sheets and their associated structural members.

3. The method of forming in situ between horizontal beams and vertical columns a wall panel comprising securing to projections extending from the adjacent faces of said beams a plurality of rows of upright metallic reinforcing structural members, connecting certain of said members in one row to certain members in an adjacent row by metallic reinforcing means, connecting to the outer faces of one row of upright members an expanded metal sheet, interposing between each pair of connected upright reinforcing members and the connecting sheet a bat of glass wool, compressing said bat by securing to the outer faces of the adjacent row of upright members a similar expanded metallic sheet, and finally applying under high velocity and pressure a cement compound to thereby completely embed the said reinforcing structural members and sheets.

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