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APPARATUS AND METHOD FOR MAKING TILE PANELS

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Fig. 1.

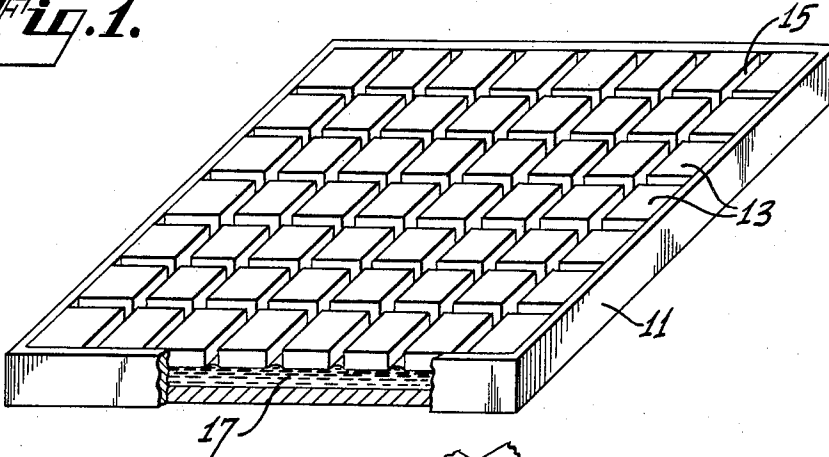


Fig. 2.

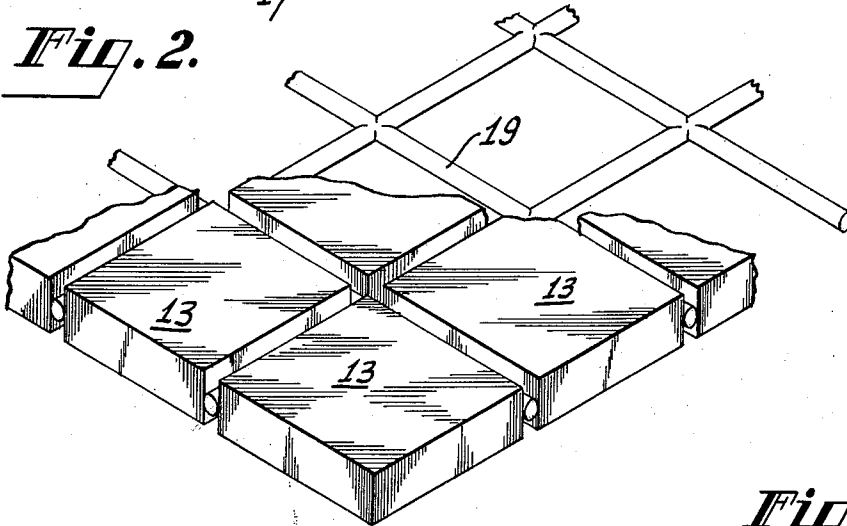


Fig. 3.

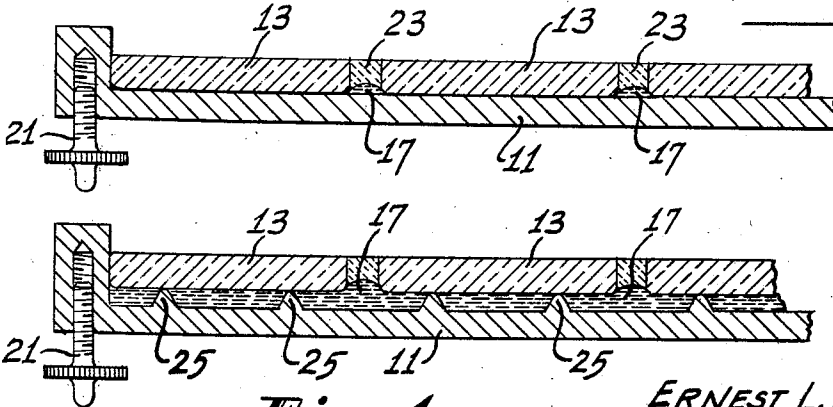


Fig. 4.

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3,070,866 APPARATUS AND METHOD FOR MAKING TILE PANELS

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4 Claims. (Cl. 25—1)

The present invention relates to mosaic panels and more particularly to the prefabrication of ceramic tile panels.

Attractive panels suitable for wall construction can be prefabricated from ceramic tile bonded together edge to edge with a suitable bonding agent. It is essential that the front surface of a tile wall be flat. One advantage to be gained by the prefabrication of tile panels is that mechanical means may be provided to insure a uniform and flat front surface to the panel.

In order that ceramic tile walls or objects present a pleasing appearance it is necessary that the bonding agent or grout which is used to bond the tiles together edge to edge have a slightly concave surface. When a tile wall is constructed tile by tile at its permanent location a neat appearing concave surface is made by hand in the grout between the tiles. When tile panels are prefabricated this desirable concave surface on the grout may be provided in the process of prefabrication.

It is a primary object of this invention to provide for improved fabrication of multiple tile panels.

Another object of this invention is to provide for properly shaping the surface of the grout between the tiles in the manufacture of tile panels.

According to this invention a plurality of tiles are positioned edge to edge, glazed surface downward, in a flat bottomed container. The tiles are spaced to form grooves between the tiles. Mercury is poured into the grooves between the tiles, making a layer of mercury at the bottom of each groove. The grooves are then filled with a tile bonding agent. The negative meniscus of the mercury causes the bonding agent between the tiles to have a neat concave surface.

Other and incidental objects of the invention will become apparent after a reading of the following specification when considered in connection with the accompanying drawings wherein:

FIGURE 1 illustrates generally one form of this invention wherein a plurality of tiles are positioned glazed surface downward in a container to which has been added a quantity of mercury.

FIGURE 2 shows one form of apparatus for properly spacing the tiles during the fabrication of a tile panel.

FIGURE 3 illustrates by sectional view an enlarged portion of the apparatus for the fabrication of tile panels, and

FIGURE 4 illustrates by cross section another form of the invention.

Turning now in more detail to FIGURE 1, there is shown a container 11 which may take the form of a large flat pan. The size of the container 11 may correspond exactly to the size of the tile panel to be fabricated.

A plurality of tiles 13 are positioned glazed surface downward and edge to edge in the container 11. A space is allowed between each of the tiles in order to provide room for the bonding agent which may be poured into the grooves 15 after the tiles 13 have been properly positioned.

A quantity of mercury 17 is added to the container 11 either before or after the tiles 13 are put into position. If, however, the tiles are positioned before the mercury is added, the mercury tends to stay in the grooves rather than to float the tiles. The amount of mercury 17 added

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must be sufficient to provide a layer in the bottom of all the grooves 15. It is important that the container 11 be level in order that the mercury 17 will have a uniform depth in all of the grooves 15.

An important advantage of the present invention is that a liquid bonding agent may be easily poured into the grooves 15 since there is no framework or tile holding element over the tiles 13.

In FIGURE 2 there is shown one arrangement for accurately spacing the tiles when they are positioned in container 11 of FIGURE 1. In FIGURE 2 there is shown a plurality of tiles 13 spaced with a wire mesh or grid 19. The grid 19 may be made from a plurality of steel rods welded together so that each opening will house a single ceramic tile. Such an arrangement will provide for accurate spacing of the tiles 13. When the tiles 13 have been properly spaced in the container 11 of FIGURE 1 the grid 19 may be removed and the bonding agent poured into the grooves between the tiles 13.

Turning now in detail to FIGURE 3, a section of the container 11 is illustrated. Tiles 13 are positioned glazed surface downward in container 11. Sufficient mercury 17 is added to container 11 to form a small ridge in each of the grooves between the tiles 13. The negative meniscus on the surface of the mercury 17 will cause a concave form in the bottom of each of the grooves between the tiles 13.

It is important that the inside of the bottom of the container 11 be level. A leveling nut 21 is illustrated for properly leveling the container 11.

Since mercury is heavier than the liquid bonding agent the mercury will remain in the bottom of the groove while the liquid bonding agent 23 is poured into the grooves between the tiles 13. Due to the weight of the mercury 17 the surface of the mercury will maintain its convex curvature. The bonding agent 23 will therefore, when set, have a concave surface on the side of the panel corresponding to the glazed side of the tile. The mercury also provides a seal with the tile to prevent feathering of the bonding agent on the glazed surface of the tiles.

Turning now in more detail to FIGURE 4 there is shown a container 11 which includes a number of nipples or ridges 25 whose upper surface forms a rest for the tiles 13. By providing at least three nipples 25 for each tile 13 the plane of the lower surface of the tiles 13 may be accurately controlled. A sufficient amount of mercury 17 is added to the container 11 to form the convex ridge in all of the grooves between the tiles 13.

A small weight may be placed on each tile to hold the tile at a predetermined depth in the mercury. In this manner the depth of the grooves in the finished panel may be controlled.

The best mode contemplated by the inventor for carrying out this invention is that shown in FIGURES 2 and 3. This comprises placing a spacing grid in a tray and arranging the individual tiles in the tray in the openings formed by the grid. After the tiles, which are to constitute the finished panels, have been placed in the tray the grid is removed, the tray leveled and the spaces between the individual tiles partially filled with mercury. A bonding agent, such as grout, is applied to the backs of the tiles and worked into the spaces between them. After setting the unitary tile panel is removed and the mercury is drained off for reuse.

Having thus described the invention, what is claimed is:

1. The method of manufacture of tile panels comprising the steps of partly immersing a plurality of tiles, edge to edge, finished surface downward, in a liquid having a convex meniscus, spacing the tiles to provide a groove between the tiles and filling the groove with a grout whereby the convex meniscus of the liquid provides a

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concave surface on the grout when viewed from the finished surface of the tile.

2. An apparatus for the formation of tile panels from a plurality of individual tiles which comprises a tray, said tray being provided with leveling means, a fluid bed of mercury disposed within said tray and spacing means for obtaining a relatively uniform spaced, edge to edge relation between the individual tiles.

3. An apparatus as set forth in claim 2, wherein the spacing means is a removable grid, said grid having openings corresponding to the size and shape of the individual tiles which are to make up the panel.

4. A method for the formation of tile panels from a plurality of individual tiles which comprises arranging individual tiles glazed surface down in a close spaced

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edge to edge relation, partially filling the spaces between said tiles with mercury and maintaining the mercury within said space, filling the remaining volume of said space with a settable binding agent and allowing said binding agent to set.

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