United States Patent [19]

O'Leary

[11] **3,740,911**

[45] **June 26, 1973**

[54] **BRICK VENEER WALL CONSTRUCTION**

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[52] **U.S. Cl.** **52/388,** 52/391

[51] **Int. Cl.** **E04f 13/14**

[58] **Field of Search** 52/388, 389, 390, 52/391, 314, 315

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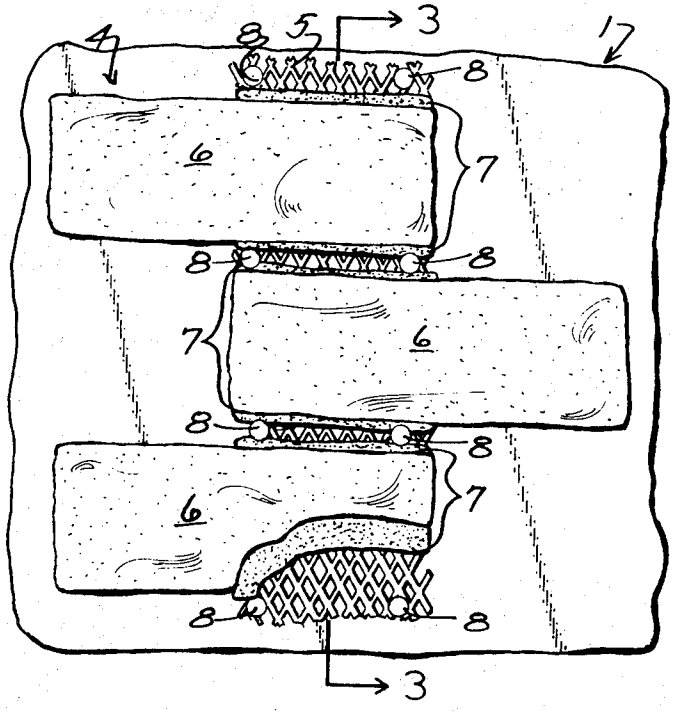
[57] **ABSTRACT**

A brick wall construction formed of a series of panels secured to a wall surface. Each panel including a backing strip of open construction, such as expanded metal mesh, and a series of rows of thin bricks are bonded to the mesh by a resin adhesive. Ends of bricks in alternate rows project beyond the side edge of the backing strip while the corresponding ends of bricks in rows between the alternate rows are positioned generally flush with the side edge of the strip so that the area between the projecting alternate bricks provide a space to receive the projecting end of a brick of the next adjacent panel. The panels are secured to the wall surface by fasteners which extend through the backing strip between the bricks, and after installation, the joints between the bricks are filled in with grout.

7 Claims, 5 Drawing Figures



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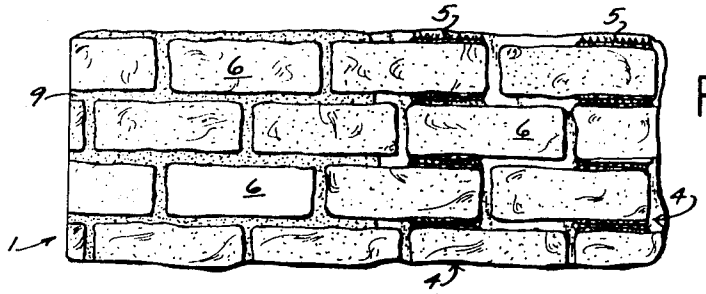
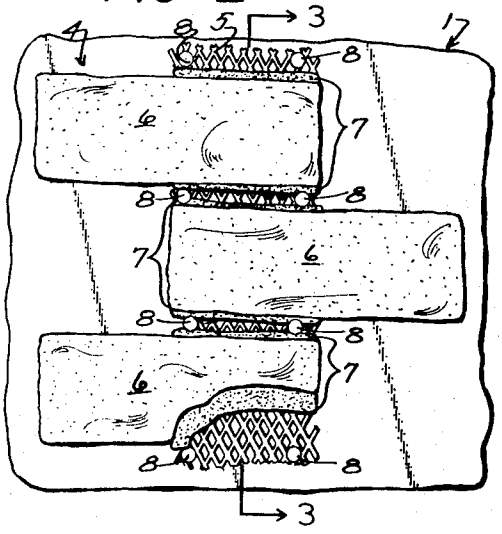


FIG. 1

FIG. 2



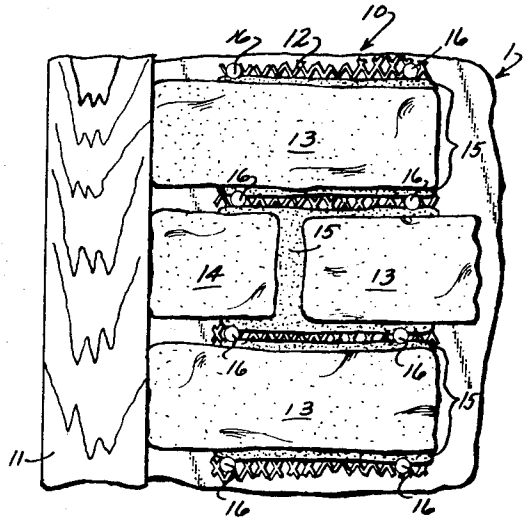


FIG. 4

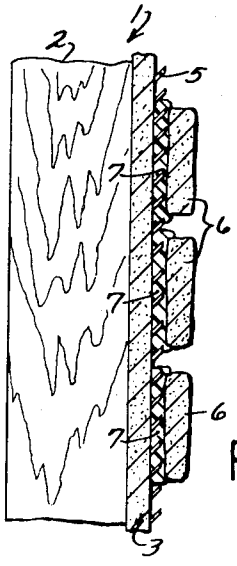


FIG. 3

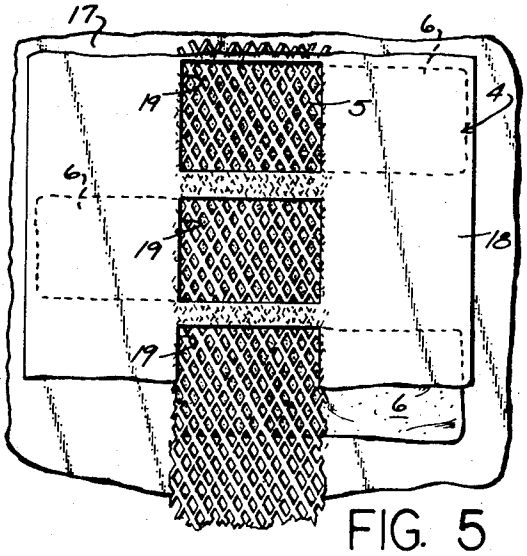


FIG. 5

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BRICK VENEER WALL CONSTRUCTION

BACKGROUND OF THE INVENTION

Brick and stone veneer walls are normally supported by footings which extend down beneath the frost level and the brick or stones are laid up with mortar joints. This type of wall construction is relatively expensive because of the requirements for footings and due to the necessity of individually laying up each brick or stone with mortar. In the past pre-cast panels having exposed stone or aggregate surfaces have been used for exterior or interior walls, and while the precast panels can be used without footings, the panels are generally set into a horizontal mortar bed and after setting of the mortar the panel is erected. Due to the weight of the pre-cast panels, expensive erecting equipment is required to erect and secure the panels to the existing walls.

Attempts have also been made to provide brick veneer walls without the use of supporting footings. For interior use, simulated brick panels including lightweight molded plastic bricks have been utilized. However, panels of this type are limited to interior use and do not present the attractive appearance of authentic brick. Attempts have also been made to fabricate panels utilizing thin clay-type bricks, but for the most part these panels have been relatively large, having a width of perhaps 4 to 8 feet, and normally require mechanical erecting equipment to install and secure the panels to the existing walls.

The walls of any building are not precisely plumb, and while individual bricks can be laid by conventional masonry techniques to compensate for the irregularities in the plumb of the wall, with the use of large, preformed brick panels any deviation from plumb in the wall surface is readily apparent at the joints between the panels.

SUMMARY OF THE INVENTION

The present invention is directed to a wall construction for either exterior or interior use which is composed of a series of interlocking brick panels. Each of the panels includes a backing strip of foraminous material, such as expanded metal mesh, and a series of rows of thin bricks are bonded to the backing strip by a resin adhesive. The ends of bricks in every other row project beyond the side edge of the backing strip, while the corresponding ends of bricks in intermediate rows are generally flush with the side edge of the strip so that areas are provided between the alternate projecting bricks which receive the projecting ends of bricks in the next adjacent panel.

The panels are secured to the wall surface by fasteners, such as nails or screws, which extend through the backing strip in the joint between bricks, and after installation of a series of panels on the wall surface, the joints between the bricks are filled in with grout so that the resulting structure is virtually indistinguishable from a conventional brick veneer wall.

The wall construction can be applied to a vertical wall surface without the requirement for expensive footings. Moreover, the completed wall construction is relatively light in weight compared to a normal brick veneer wall. The installation of the decorative wall of the invention is a comparatively fast operation as compared to traditional masonry methods of wall construction and this results in a substantial time and labor savings.

The wall construction of the invention can be used on either interior or exterior walls and can be applied to concrete block walls, poured concrete walls, plaster walls, wood panelled walls, wood or metal stud walls, and has particular application in covering existing porcelain enamel walls during remodeling of service stations.

As the bricks have a thickness generally about three-fourths inch, the wall provides a true three-dimensional effect which has the appearance of a conventional brick veneer wall.

Other objects and advantages will appear in the course of the following description.

The drawing illustrate the best mode presently contemplated of carrying out the invention.

In the drawings:

FIG. 1 is a plan view of a wall utilizing the construction of the invention with parts broken away in section;

FIG. 2 is a plan view of a portion of a wall having a brick panel applied thereto;

FIG. 3 is a vertical section taken along line 3—3 of FIG. 2;

FIG. 4 is a plan view of an end butt panel in which the panel is butted against a frame member; and

FIG. 5 is a plan view showing the manner of fabricating a brick panel.

The drawings illustrate a wall construction fabricated in accordance with the invention and including a vertical wall 1 which can be composed of a series of spaced vertical studs 2 and wallboard or sheathing 3 is nailed or otherwise attached to the studs 2. While the drawings illustrate the wall 1 as being formed of a stud and wallboard construction, it is contemplated that the wall can be formed of other materials, such as poured concrete, concrete block, plastic, wood panelling, porcelain enamel panels, or the like.

According to the invention, a series of panels 4 are secured to the wall 1 and each panel includes a backing strip 5 of perforated or foraminous material. A series of thin bricks 6 are secured to the backing strip 5 in a series of rows by a layer of adhesive 7.

The backing strip 5 is preferably formed of expanded metal lath or mesh with the maximum dimension of the holes of the lath being less than one inch and preferably in the range of one-fourth to three-fourths inch. Expanded metal lath having diamond-shaped openings with the size of ¼ × ⅝ inch provides a very satisfactory backing strip 5.

The bricks 6 are preferably standard clay-type bricks having a thickness generally in the range of ½ to 1⅛ inches with a thickness of about three-fourths inch being preferred. While the wall construction is preferably utilized to fabricate a brick veneer wall, other objects can be substituted for the bricks, such as pieces of marble, slate, glass, metal, stone, or the like.

The adhesive layer 7 is a mixture of cured polyester resin, a granular or finely divided filler and asbestos fibers as disclosed in U.S. Pat. No. 3,435,577. In general, the adhesive composition has the following formulation in weight per cent:

Polyester resin	20 to 60%
Filler	35 to 75%
Asbestos fibers	3 to 15%

The filler can be any conventional finely divided material such as sand, clay, granulated marble, pearlite, sawdust, or the like,

The abestos fibers provide reinforcement and lubricity for the adhesive and generally have a length less than one-half inch and preferably in the range of one-eighth to one-fourth inch.

As shown in the drawings, each brick **6** has a length substantially greater than the width of the strip **5** so that the ends of the bricks in each alternate row project outwardly beyond the corresponding side edge of the backing strip, while the corresponding ends of the bricks in intermediate rows are generally flush with the side edge of the backing strip **5**. Thus, the projecting ends of the bricks in alternate rows provide pockets or spaces to receive the projecting ends of bricks of adjacent panels. When the panels are applied in this manner to the wall **1** the overall appearance is that of a continuous brick veneer wall.

Extending the ends of bricks in alternate rows beyond the corresponding side edge of the backing strip enables the panel to be more readily cut to the desired size and installed. The projecting ends of the bricks can be cut with a masonry saw or brick chisel without interference from either the backing strip or the adhesive layer and this enables the panel to be readily trimmed to fit around doors, windows, or other obstructions.

As shown in FIGS. **2** and **3**, the adhesive layer **7** does not extend continuously between adjacent bricks, so that the mesh or backing strip **5** is exposed between the adjacent bricks. This is an important feature in that the exposed lath or mesh between adjacent bricks provides flexibility for the panel, enabling the panel to conform to irregularities in the wall surface. If the adhesive layer extended continuously throughout the length of the backing strip **5**, the adhesive layer, being of a hard inflexible nature, would restrict the flexibility of the panel. Furthermore, the panel is secured to the wall by nails or screws **8** which extend within the openings in the strip **5** and are located in the joints between adjacent bricks **6**, as shown in FIG. **2**.

While the drawings illustrate the panels **4** being composed of single bricks in each vertical row, it is contemplated that each row may contain one or more bricks and be several feet in width. The use of a single brick in each row, as illustrated in FIG. **2**, has an advantage in that it enables the joints between bricks in adjacent panels to be more readily adjusted or varied in order to compensate for irregularities in plumb of the wall surface. Using panels having a substantial width, in the neighborhood of 4 to 8 feet, would mean that any variations in plumb would have to be compensated for at the joints between panels and any large variation in the joint size between panels would be readily apparent to an observer. Moreover, panels composed of a single brick in each row, or two or three bricks in each row, are lighter in weight and can be carried and installed by a single workman.

After the panels **4** have been installed on the wall **1** by the fasteners **8**, the joints between the bricks are filled with grout or mortar **9**. The grout can be applied by trowelling the grout over the entire brick wall, or alternately by using a mortar gun in which the grout or mortar is extruded into the joints. When using the trowelling method, it may be desirable to apply release coat to the outer surface of the bricks so that the grout will not penetrate the outer surface of the brick during trowelling. If the grout penetrates the brick surface it is normally necessary to use an acid wash to clean the bricks. The release coat can take the form of a water soluble material such as soap, wax, or the like that can be readily washed from the brick surface by water or steam after the grouting has been completed.

To enhance the bonding between the bricks and the adhesive **7**, the rear surface of the bricks can be sand blasted which serves to remove any dirt, glazing, or foreign materials, as well as providing a rougher surface to increase the bonding between the members.

FIG. **4** illustrates a brick wall panel **10** which can be butted against a frame member **11**, such as a door or window frame. The panel **10** includes a backing strip **12**, similar to backing strip **5**, and a series of full bricks **13** and half-bricks **14** are secured to the backing strip **12** by means of a resin adhesive **15**, similar in composition to adhesive **7**. The panel **10** is applied to the wall **1** by a series of fasteners **16**, such as screws or nails, which are inserted through the openings in the backing strip **12** and into the wall surface **1**.

The projecting ends of the bricks **13** and **14** in each row are in vertical alignment and can be abutted against the frame member **11**. Wall panels, similar to panels **4**, can then be attached to the wall **1** and mated or interlocked with the wall panel **10**.

The joints between the bricks can be filled in with grout in a manner similar to that described with respect to the embodiments shown in FIGS. **1–3**.

FIG. **5** illustrates a method of fabricating the panels **4**. As shown in FIG. **5**, a series of bricks **6** are layed face down on a horizontal supporting surface **17** and a suitable jig or fixture can be employed to hold the bricks in the desired alignment. With the bricks properly positioned on the surface **17**, the strip of backing material **5** is applied over the upwardly facing surfaces of the bricks **6**, as shown in FIG. **5**. A template **18** having a series of openings **19** is positioned over the bricks with the openings being aligned with the bricks. The uncured resin adhesive **7** is then trowelled over the template **18** and into the openings **19** thereby penetrating the portion of the expanded metal mesh or backing strip **5** located beneath the openings **19**. After adhesive has been trowelled into the openings **19**, the template can be removed and additional pressure can be applied to the structure to force the adhesive layer **7** into the openings in the backing strip **5**. The use of the template **18** keeps the ends of the bricks, as well as the joints between adjacent bricks, free of adhesive.

After setting or curing of the adhesive **7**, the panel can then be installed on wall surfaces as previously described.

The wall construction of the invention can be applied to either interior or exterior walls without the necessity for footings, and the resulting wall has the appearance of conventional brick veneer, although when using the three-fourths inch bricks the weight is only about one-fourth that of the normal brick veneer wall.

The wall construction can be used in either new or existing constructions and has particular application in remodeling service stations, in which the brick panels are applied to the existing procelain enamel wall surfaces of the station.

The individual panels are relatively light in weight and can be readily handled and installed by a single workman. The installation of the wall is a comparatively fast operation compared to the traditional masonry methods of laying a brick veneer wall and this results in a substantial labor and time savings.

While the drawings show the panels of the invention applied to a vertical wall surface, it is contemplated that the panels can be applied to horizontal surfaces, such as ceilings or floors, or inclined surfaces, and thus the term "wall" as used in the description and claims is intended to include any vertical, horizontal or angular structure or non-structural surface.

While the drawings illustrate two forms of the panel in FIGS. 2 and 4, it is contemplated that various shapes and sizes of panels can be constructed in accordance with the invention for use on flat wall surfaces, contoured wall surfaces, interior and exterior corners, and the like. In some instances it may also be desired to employ a vertical stacked arrangement in which, instead of the joints between bricks being offset in each row, as illustrated in FIG. 1, the joints are in vertical alignment. In the vertical stacked arrangement both ends of the single bricks in each row can project beyond the corresponding side edge of the backing strip in the manner described with respect to the embodiment of FIG. 1.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

I claim:

1. A building panel, comprising a flexible backing strip having a series of openings therein, an adhesive bonded to a surface of the backing strip and disposed within the openings in the strip, and a plurality of bricks bonded to the adhesive and located in a series of spaced, generally parallel rows, the spaces between the bricks in adjacent rows being substantially free of adhesive to thereby provide flexibility for the panel to conform to wall surfaces, a brick in each row having an extremity that projects outwardly beyond the corresponding side edge of the backing strip, said strip being elongated and the longitudinal dimension of the strip being disposed normal to the longitudinal dimension of the bricks and the longitudinal dimension of the bricks being substantially greater than the width of the strip.

2. The panel of claim 1, wherein said bricks have a thickness in the range of ½ to 1 ⅛ inches.

3. The panel of claim 1, wherein the corresponding ends of the bricks in alternate rows project outwardly beyond side edges of the backing strip and the corresponding ends of the bricks in intermediate rows between said alternate rows terminate in general alignment with said side edge of the backing strip.

4. The panel of claim 1, wherein each row is composed of a single brick and one end of each brick projects laterally outward beyond the corresponding side edge of the backing strip and the other end of each brick is disposed in general alignment with the opposite side edge of the backing strip.

5. The panel of claim 4, wherein the ends of bricks in alternate rows project outwardly beyond a side edge of the backing strip and the opposite ends of bricks in intermediate rows project outwardly beyond the opposite side edge of the backing strip.

6. The panel of claim 1, wherein the backing strip is formed of expanded metal.

7. The wall construction of claim 1, wherein the corresponding ends of bricks in said rows project outwardly beyond the corresponding side edge of the backing strip and said projecting ends are disposed in alignment, whereby the panel can be applied to an exterior corner of a wall.

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