

[54] **BRICK PANEL CONSTRUCTION**
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[52] **U.S. Cl.** **52/384; 52/519; 52/541; 52/592**

[51] **Int. Cl.²** **E04F 13/08**

[58] **Field of Search** 52/316, 384, 385, 390, 52/388, 389, 519, 315, 314, 541, 592, 264/35, 261

[57] ABSTRACT

The unbricked edge portions of a brick panel intended to receive overlapping bricks projecting beyond the edge of an adjacent panel are recessed to facilitate the sliding of a panel under the projecting bricks of an already installed panel at the time of panel installation. Individual bricks are secured to the supporting board by a plurality of small adhesive mounds, each mound being deposited directly over a local depression in the board face to enhance the strength of the bond by forming a sheer-resisting interlock with the depression edges.

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1 Claim, 8 Drawing Figures

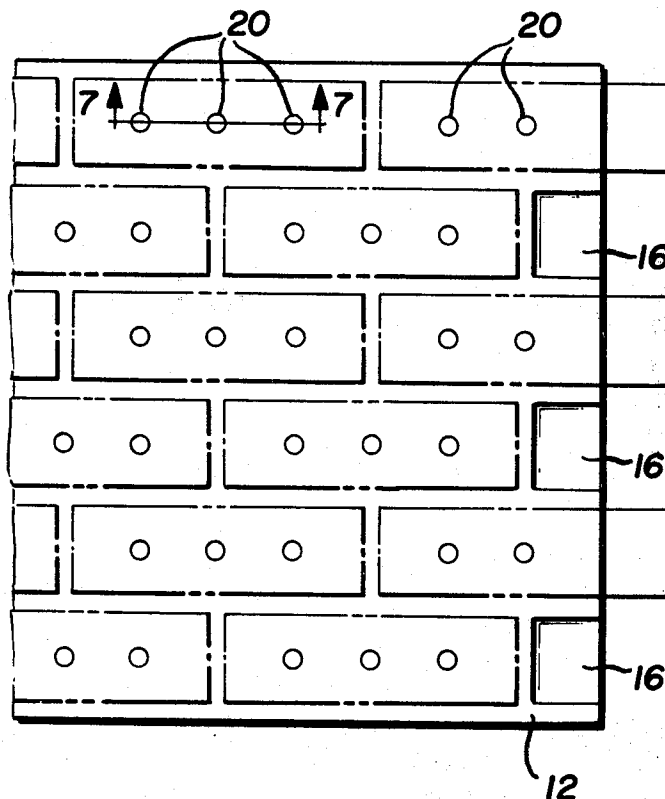


FIG. 1

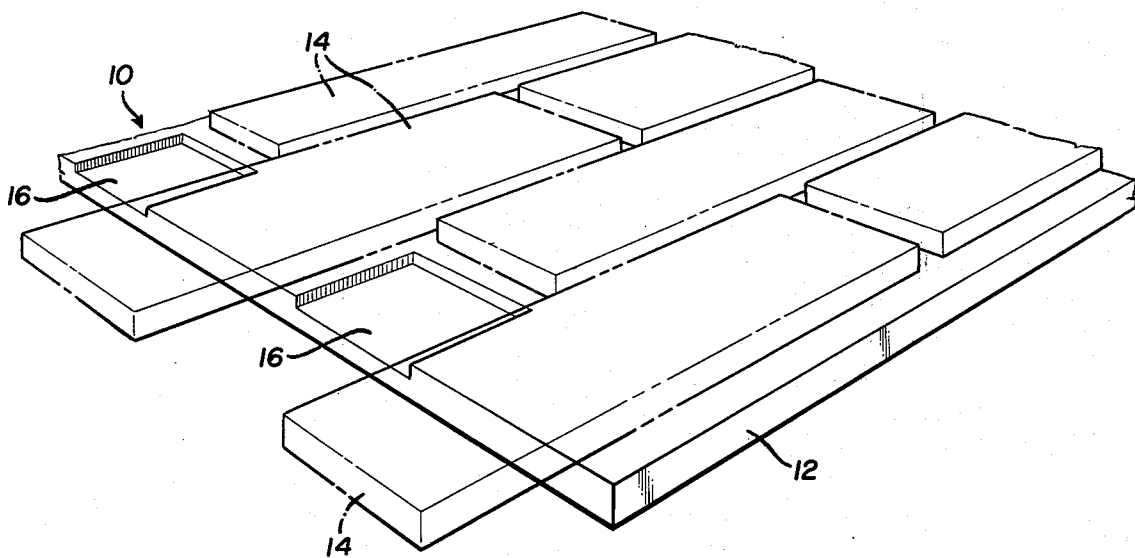
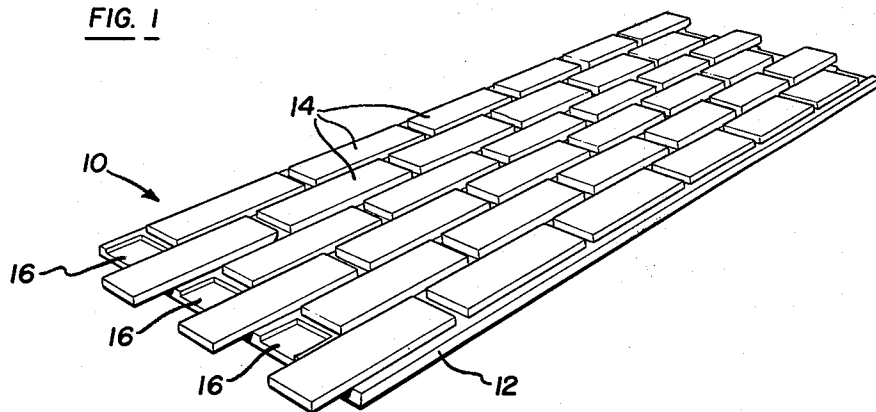


FIG. 2

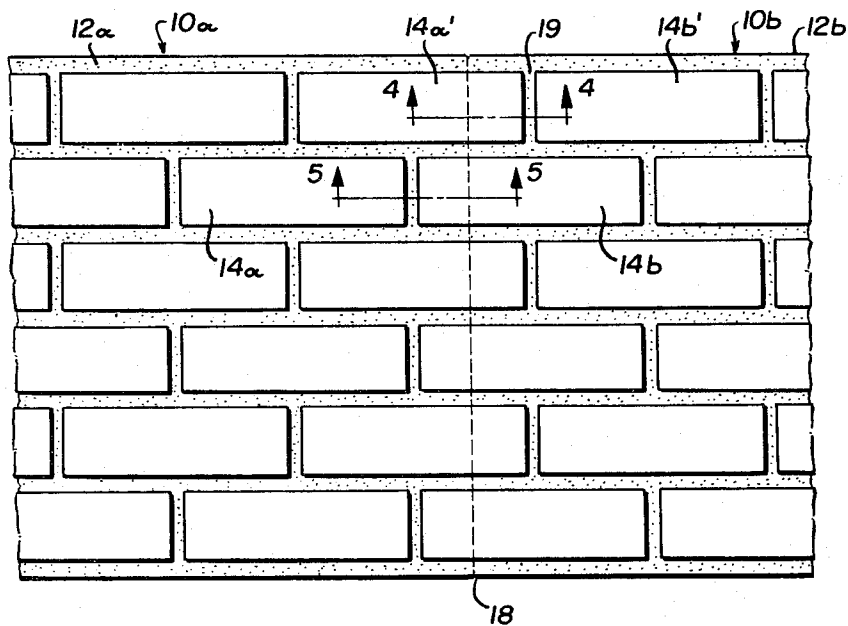


FIG. 3

FIG. 4

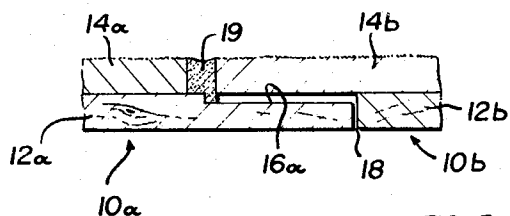
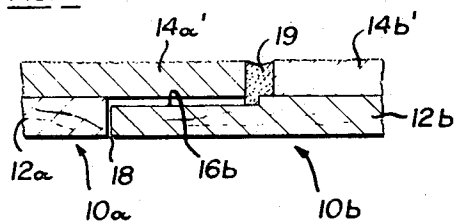


FIG. 5

FIG. 6

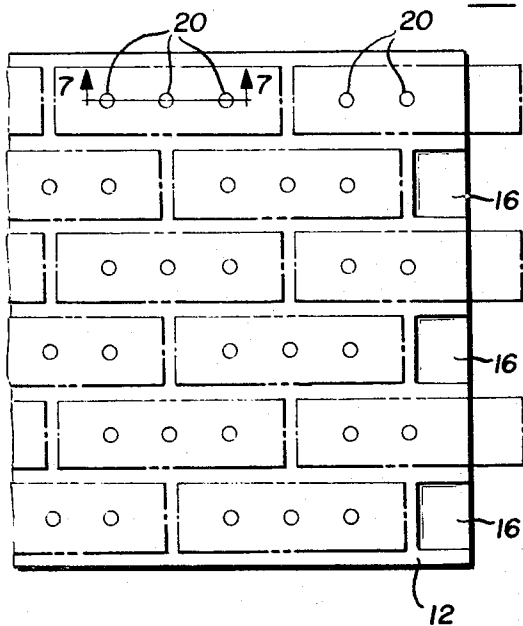


FIG. 7

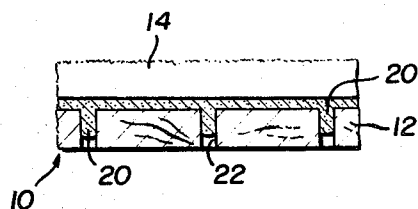
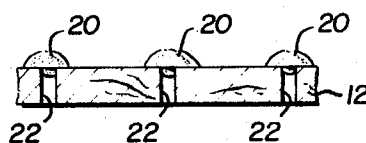


FIG. 8

BRICK PANEL CONSTRUCTION

BACKGROUND OF INVENTION

This invention relates to improvements in brick panels. Brick panels are conventionally used in either original construction or in remodeling applications, and consist of one-half inch thick otherwise conventional kiln-fired bricks secured in conventional patterns to a half inch thick board by means of an adhesive. Typically, the board may be formed of an asphalt-impregnated wood fiber material 16½ inches high by 48 inches long, so as to receive six rows of 2¼ inch high by 7½ inch long brick. The brick panels are applied to the supporting structure by hand driven or power driven nails in the open mortar joints between the bricks. The mortar is then applied to the three-eighth inch or half-inch spaces between the bricks, so as to conceal the joints between adjacent panels, to also conceal the nails, and to render the completed installation indistinguishable from conventional brick construction.

In the arrangement of the individual bricks in conventional running bond pattern on the boards, it is conventional to have the last brick of alternating courses at each edge of the panel project slightly beyond the panel edge, so as to overlap and interlock with a unbricked gap at the corresponding location on the edge of the adjacent panel. This arrangement, which is desirable both from the authenticity of appearance and interlocking standpoints, has created installation problems. Once a panel has been nailed or stapled to the supporting structure, it is necessary to slide the adjacent panel, of the same horizontal row, in under the edges of the projecting bricks of the already installed panels. At best, the undersurface of these projecting bricks is coplanar with the upper surface of the unbricked portion of the panel which is to slide under such projecting bricks, creating an inherent interference situation. This situation is often aggravated by the fact that some of the bricks may have an unavoidable convex longitudinal arch, so that the projecting brick edge may actually be below the level of the outer panel surface. This interference between the projecting bricks of one panel and the surface of the board of the adjacent panel not only substantially slows the installation process, but also occasionally results in bricks being accidentally pried off the board surface.

Another problem which has been experienced with conventionally made brick panels involves the bonding of the individual bricks onto the board. The board is generally an asphalt impregnated fiberboard, which also has an asphalt surface coating. Therefore, the adhesive, which is generally a synthetic rubber-resin based waterproof adhesive, generally forms only a surface bond between the underside of the brick and the asphalt coating on the surface of the board. Such a bond is not as effective as if the adhesive were bonded and interlocked more intimately and directly with the fibers of the board. The problem arises because the asphalt deteriorates under exposure to ultra-violet, becoming oxidized and brittle. The brittleness is detrimental because the different coefficients of expansion between the board and the brick require that adhesive should retain its ability to yield under variations in temperatures. The ability of the bond to resist shearing forces between the brick and the board thus deteriorates because of this phenomenon. Also, the asphalt

surface layer has a tendency to delaminate from the board.

Accordingly, it is the object of the present invention to provide an improved brick panel, which avoids the installation problems described above, and which provides an improved and stronger bond between the brick and the board.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a brick panel.

FIG. 2 is a perspective view of a portion of the brick panel of FIG. 1, showing the bricks in phantom.

FIG. 3 is a fragmentary view of two adjacent brick panels in side by side relationship after installation.

FIG. 4 is a cross-section viewed in the direction of arrows 4—4 of FIG. 3.

FIG. 5 is a cross-section viewed in the direction of arrows 5—5 of FIG. 3.

FIG. 6 is a plan view of a portion of a single unbricked board, showing the outlines of the bricks in phantom, and showing one arrangement of adhesive applications. FIG. 7 is a cross-sectional view in the direction of arrows 7—7 of FIG. 6.

FIG. 8 is a cross-sectional view similar to FIG. 7, but showing the bricks applied to the board of FIG. 7.

DETAILED DESCRIPTION OF THE INVENTION

Referring to FIG. 1, the brick panel 10 consists of, by way of example, a ½ inch by 16½ inch by 48 inch asphalt impregnated wood fiberboard 12, having a plurality of ½ inch thick by 2¼ inch by 7½ inch kiln-fired bricks bonded thereto in a conventional running bond pattern. Alternating rows or courses of brick project beyond the edges of the board while the intermediate courses have an unbricked portion adapted to receive the similarly projecting bricks of an adjacent panel.

In FIG. 2, where the bricks have been shown in phantom so as not to conceal one of the features of the present invention, it will be seen that the unbricked portion of the panel edge is recessed at 16. Recess 16 is shaped and dimensioned so as to provide full clearance for the projecting portion of the brick of an adjacent panel. Preferably, the recess should be about one-sixteenth of an inch deep. Thus, the recess eliminates the interference, described above, which commonly occurs between the undersurface of the projecting bricks of one panel and the upper or outer board face of the next panel. Recesses 16 are preferable to a full-depth cut-out in the board, because the latter eliminates a desirable nailing area and also precludes a panel-interlocking effect resulting from the overlap of the projecting brick of one panel with the unbricked spaces on the adjacent panel.

Recesses 16 can be formed in the bare boards by a variety of techniques, as will be understood by those skilled in the art. One technique would involve running the boards through a die in end to end abutting relationship, with the boards being indexed in 48 inch increments so that the abutting of two adjacent boards are simultaneously under a die which is shaped to stamp the staggered and alternating depressions simultaneously in the two adjacent edges.

FIGS. 3–5 show the manner in which the recesses 16 function to eliminate this interference problem. FIG. 3 shows a portion of two adjacent installed panels, the panels abutting along a joint line 18. FIGS. 4 and 5 show sections through adjacent courses of brick. In the

course of FIG. 4, brick 14a' of left panel 10a overlaps recess 16b of right hand panel 10b, while in the next adjacent course of FIG. 5, brick 14b of panel 10b overlaps recess 16a of panel 10a.

After installation and nailing, the spaces between adjacent bricks are filled with mortar, shown at 19 in FIGS. 4 and 5, to complete the installation, and to render the finished wall indistinguishable from a conventionally bricked wall.

A conventional technique which has been used in the past for applying the brick-securing adhesive to the board consists of running the boards under an adhesive-filled hopper which applies three parallel continuous stripes of adhesive under the space to be occupied by each course of bricks. The hopper may have a notched bar with sluice gates that lay down this striped pattern upon the moving panel passing beneath the hopper. The gates may be programed to shut off the flow at the ends of the board where no adhesive is desired on the unbricked portions.

This conventional technique of adhesive application presents two problems. The first is the above described problem involving the inability to form a bond between the adhesive and the fibers, because of the surface layer of asphalt. A second problem is created by the novel use of recesses 16 according to the present invention. When the notched bar of the adhesive hopper passes over a recess 16, there would be no means for readily preventing adhesive flow into the recess zone. The resulting accumulation of adhesive in the recess would completely destroy its function of providing clearance for the projecting bricks of an adjacent panel at the time of installation.

Thus, another feature of the present invention involves an improved technique for applying the adhesive, which technique avoids both of the above described problems. This technique is illustrated in FIGS. 6 through 8.

The adhesive is applied as a series of longitudinally spaced small mounds 20, which may be applied by means of an overhead manifold having a plurality of aligned nozzles which eject small quantities of adhesive under the influence of compressed air. The adhesive is preferably deposited directly over a local depression or hole 22 in the board, the synchronizing of the adhesive deposit with the hole location in the moving board being accomplished by microswitches, for example, as will be understood by those skilled in the art. Alternatively, the board could be fixed against a stop under a system of nozzles which simultaneously deposit all of the required adhesive mounds.

Applying the adhesive as separate shots rather than a continuous strip, as formerly used, avoids the problem of having adhesive fill recesses 16.

The use of holes 22 permits the adhesive to penetrate down into the board, so as to interlock with the individual fibers and also to form a shear-resisting bond with the edges of the holes.

As shown in FIG. 6, one effective pattern for the application of the individual shots of adhesive is to employ three longitudinally spaced shots for each brick. For any given course or row of bricks, every fourth shot would be skipped, this being the space that would correspond with the gap between two adjacent bricks. Other mound patterns may also be employed, as will be understood by those skilled in the art.

FIG. 8 shows the manner in which the adhesive mound 20 would spread out beneath brick 14 and also penetrate further into hole 22 upon subsequent application of the brick to board 12.

An essential aspect of this feature of the invention is that there be some kind of a depression into which the adhesive can flow, so as to establish the desired interlock to enhance the shear strength of the bond. The depression can be in the form of a through-hole 22, as illustrated in FIGS. 7 and 8. Such a hole would permit the application of the vacuum, if necessary, applied from beneath the board 12 to aid in pulling part of the viscous adhesive 20 down into the hole.

Such a hole could also have a reverse taper, that is, smaller at its upper end than at its lower end, so that the adhesive would form a tapered plug which could not be pulled upward out of the hole. This arrangement would give greater tensile as well as shear strength. Another alternative to the use of a through-hole is to use either a partial depth hole or a continuous longitudinal groove, either of which would give the desired pinning action of the adhesive against the edges of the depression, so as to resist shearing of the brick off the board face.

The use of the mounds 20 of adhesive eliminates one of the other problems resulting from the former technique of applying the adhesive. Because some of the bricks have a convex longitudinal arch, the underface of the brick is only in contact with the board at the two ends of the brick, and therefore does not have sufficient contact area with a thin continuous strip of adhesive to establish a strong bond. The use of thick mounds of adhesive, as disclosed herein, assures adequate contact in spite of a nonplanar undersurface of the brick.

This invention may be further developed within the scope of the following claims. Accordingly, the above specification is to be interpreted as illustrative of only a single operative embodiment of this invention, rather than in a strictly limited sense.

I now claim:

1. A brick panel of the type characterized by a relatively thin, generally planar board having numerous bricks arranged in a conventional pattern of parallel courses, said bricks being bonded to one face of the board by an adhesive layer, and wherein a portion of the face adjacent to at least one of the board edges that extends perpendicular to the brick courses has unbricked portions which alternate along said edge with bricks which partially project beyond said edge, said unbricked portions being adapted to receive in overlapping and interlocking fashion portions of bricks bonded to and projecting partially beyond the edge of an adjacent abutting but non-overlapping board, the improvement of:

said unbricked portions being slightly recessed below the plane of the board face which will be bricked, whereby, when the brick panel is subsequently installed on a supporting structure, said recessed unbricked portions receive and thereby permit the panel board to be readily slid under the projecting bricks of the adjacent already installed panel;

a plurality of depressions in the board face into which adhesive extends so as to form an improved interlock to resist shearing of the brick from the board, said adhesive layer being formed by depositing mounds of adhesive over each of the depressions and applying the bricks to the panel, whereby the adhesive is applied as mounds in order to avoid filling the recesses with adhesive.

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