Sept. 14, 1937. L. E. WILLSON 2,093,261

BUILDING WALL STRUCTURE

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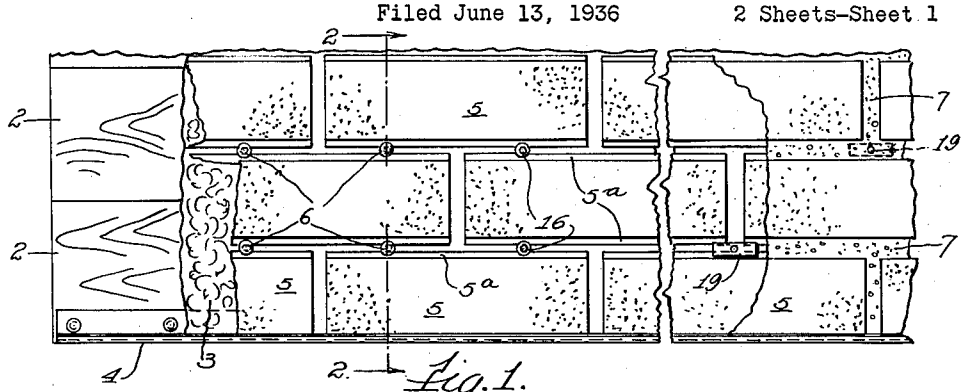


Fig. 1.

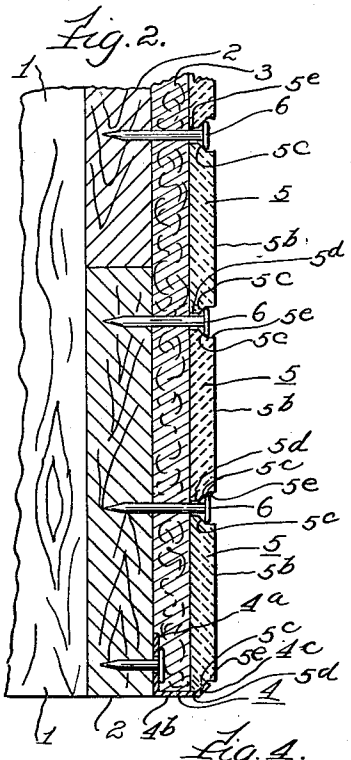


Fig. 2.

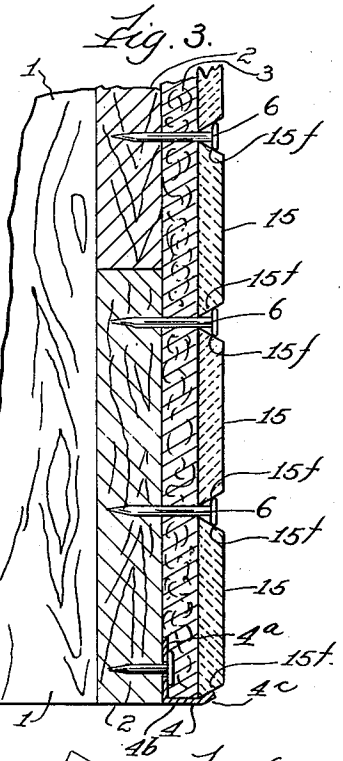


Fig. 3.

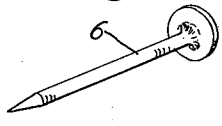


Fig. 4.

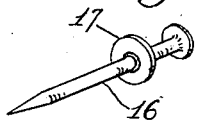


Fig. 5.

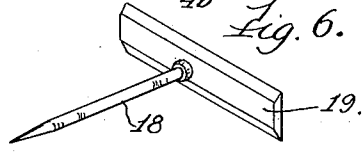


Fig. 6.

Witness.
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BUILDING WALL STRUCTURE

Filed June 13, 1936 2 Sheets-Sheet 2

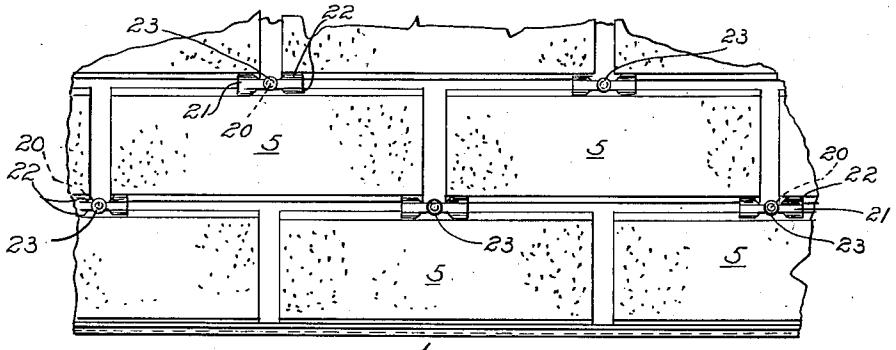


Fig. 7.

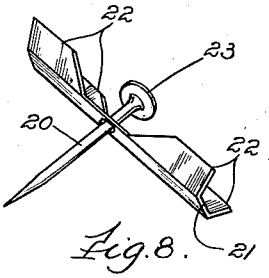


Fig. 8.

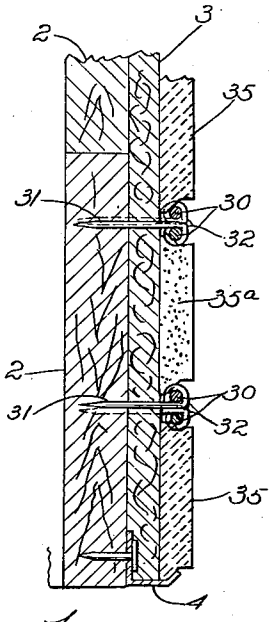


Fig. 9.

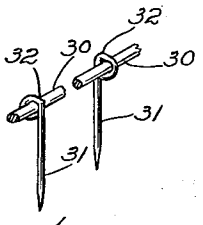


Fig 10.

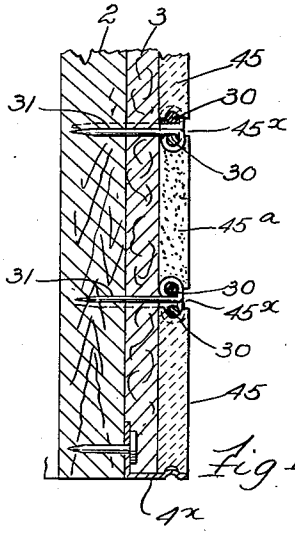


Fig 11.

Witness
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UNITED STATES PATENT OFFICE

2,093,261

BUILDING WALL STRUCTURE

Lester E. Willson, Streator, Ill., assignor to Brick-V-Neer Sales Company, Streator, Ill., a corporation of Illinois

Application June 13, 1936, Serial No. 85,101

5 Claims. (Cl. 72—19)

This invention relates to building wall structure, being particularly adapted to exterior walls of buildings and being especially designed though not limited to refinishing the walls of existing buildings to improve their external appearance as well as their heat and water resisting properties. One object of the invention is to provide a wall structure which when completed has the appearance of a standard brick wall but which employs surfacing elements in the form of relatively thin slabs or tiles whose faces are of substantially the same dimensions as standard bricks. Another object is to provide a wall of this character which may be built up rapidly and accurately by relatively unskilled mechanics; another object is to provide a wall surface structure which may be applied to basic wall structure in a manner insuring close and firm securement thereto of a permanent nature. Other objects will appear from the description which follows. The invention thus consists in certain features and elements of construction in combination as herein shown and described and as indicated by the claims.

In the drawings:

Figure 1 is a fragmentary side elevation of a wall structure embodying this invention with parts broken away to show the several layers of the structure.

Figure 2 is a vertical section taken substantially as indicated at line 2—2 on Figure 1 and on a larger scale.

Figure 3 is a vertical section similar to Figure 2 showing a slightly modified form of tile or facing slab.

Figures 4, 5 and 6 are perspective detail views respectively, of three alternative forms of fastening elements or nails for holding the tiles in place.

Figure 7 is a fragmentary side elevation of a wall structure with a further modification of the fastening means applied thereto.

Figure 8 is a perspective view of the fastener shown in Figure 7.

Figure 9 is a vertical section of a typical wall employing retaining wires as fastening means for the tiles.

Figure 10 is a perspective view of a fragment of one of the wires with special supporting nails assembled thereon.

Figure 11 is a sectional view similar to Figure 9, but showing a different form of tile in which the edge is grooved instead of beveled.

My improved wall structure is intended primarily for application to so-called "frame" or wooden buildings in place of shingles, siding, stucco or other external surface finish, and is applicable both to new structures and to old buildings. The tiles or slabs which constitute the exterior surfacing material may be secured directly against sheathing or any flat surface that will receive nails, but when the surface is too uneven it may be covered first with sheet material such as composition board; if heat insulation is wanted, a board such as "Celotex" or some similar material may be employed. My wall structure may also be used as an interior wall treatment where desired. By way of illustration, the drawings show the basic wall as consisting of the usual framing members, 1, covered by sheathing boards, 2. I apply directly over the sheathing boards, 2, a sheet or panel of any suitable composition board such as "Celotex" which is indicated at 3, and at the lowest point of the wall to be thus treated I may provide a supporting metallic molding, 4, having a vertical leg, 4^a, which may be nailed against the sheathing, 3, adjacent its bottom edge, and a horizontally projecting leg, 4^b, forming a ledge on which the lower edge of the wallboard panel may rest. Preferably the outer edge, 4^c, of the molding is bent obliquely upward to engage closely the lower edges of the first course of facing tiles or slabs, 5, which form the outer surface of the finished wall. However, this particular form of support for the first course is not essential; the foundation may already afford a shoulder or may be altered to include such a supporting ledge, made of concrete; or a wooden strip may be used as a temporary support, being removed after tuck-pointing of the tiles and replaced by a permanent ledge such as a concrete bevel base.

Each of the slabs, 5, has substantially the same external dimensions as the exposed face of a standard brick, but the thickness of the slab is much less and need not exceed one-half inch. The slabs may be made of the same material as regular face brick cut to the desired thickness and burned in accordance with methods already perfected, or they may be made of other suitable material such as concrete or asphalt, for example. Preferably the longer edges, 5^a, of each tile, 5, which form the horizontal edges in the usual arrangement of the tiles in a wall as in Figure 1, are beveled or otherwise shaped to extend obliquely with respect to the outer face, 5^b, of the tile, instead of at right angles thereto. This affords oblique surfaces which may be engaged by fastening means such as nails, 6, driven into the board, 3, and preferably through it into

the sheathing, 2, in the spaces between the adjacent courses of the tiles for holding them firmly in place. The back surface of each tile, 5, is substantially flat so that it may fit flatly and closely against the outer surface of the backing when applied directly to the sheathing or to the board, 3, and secured in position by the nails, 6; and being disposed between adjacent courses of the tiles the head of each nail, 6, engages the inclined edges of two adjacent tiles, thus spacing them apart and keeping this spacing substantially uniform ready to be filled in with mortar applied after the manner of tuck-pointing. The mortar, which is omitted from the sectional views, Figures 2 and 3, appears at 7, in the finished portion of the wall structure shown in Figure 1, and being applied flush with the outer surfaces of the tiles, 5, or almost flush, in accordance with standard practice, this mortar will entirely conceal the heads of the nails, 6, or other equivalent fastening means by which the tiles are closely secured to the board, 3. The mortar, 7, filling the grooves between the adjacent tiles except for the small spaces occupied by the nails, 6, will "bond" with the backing, 3, exposed at the bottoms of these grooves, as well as with the edge surfaces of the tiles themselves and will thus form the tiles and the board into a substantially unitary and rigid wall structure which is firmly held by the nails, 6, to the sheathing, 2, or other basic structure.

As shown in Figure 2, the inclined portions of the horizontal edges of each tile do not extend from the inner to the outer face of the tile but are disposed intermediate these faces at 5^c, where they are joined by narrow perpendicular surfaces, 5^d and 5^e, extending respectively to the back and front faces of the tile. This stepped formation affords the desirable inclined surface, 5^c, for engagement with the heads of the nails, 6, without unnecessarily widening the grooves or channels between adjacent tiles at their outer surfaces and without unduly narrowing the bottom portions of these grooves adjacent the backing element, 3. Thus the tuck-pointing is given ample surface for bonding with the backing board, 3, but does not become too prominent a feature of the wall at its outer surface. However, if preferred, the tiles may be made as shown at 15 in Figure 3 with plainly beveled edges, 15^f, but with this continuous straight bevel if the tiles are spaced apart so as to afford the same width of the groove at the bottom, the groove at the outer surface will be considerably wider than that which results when tiles of the form shown in Figure 2 are used, unless the angle of the beveled edges, 15^f, more nearly approaches the perpendicular, as in fact it does in the design illustrated in Figure 3.

Whichever form of tile is employed, each individual tile is held firmly in contact with the outer surface of the backing member, 3, so that no cement or adhesive need be employed between the outer surface of the member, 3, and the inner or back surface of the tile; and the securing means which holds the tile in place is therefore disposed wholly in the spaces between adjacent tiles.

Instead of employing a unitary headed nail, 6, I may secure a fastener with a sufficiently large head by adding to an ordinary nail, 6, a washer, 17, as shown in Figure 5. Or, if preferred, a special fastener may be made in the form shown in Figure 6 in which the pointed shank, 18, is rigidly secured in an oblong head, 19, which, if desired, may be made with beveled edges to assist it in seating more snugly against the inclined edges of adjacent tiles. When the nails of Figure 4 or Figure 5 are used I prefer to apply two nails to each horizontal edge of the tile, and since each nail will engage the adjacent edges of two tiles this results in the arrangement shown in the left-hand portion of Figure 1. Near the right-hand end of the figure, I have indicated a preferred arrangement of the fastening means shown in Figure 6. One of these devices is sufficient in the length of each tile and may be disposed substantially at the middle of this length engaging the upper edge of the tile; at the opposite side of the groove each fastener will thus engage the extreme end portions of the two adjacent tiles with the result that each tile is thus held in position by three fasteners, one engaging the middle of one horizontal edge and the other two engaging opposite ends of the other horizontal edge of the tile.

As a modification of the elongated fastener, 19, I have shown in Figures 7 and 8 a two-part fastener consisting of a standard nail, 20, and a member which may be formed as a casting, but, preferably, as a sheet metal stamping, and which consists of a flat central body portion, 21, with obliquely projecting wings, 22, extending laterally therefrom at both ends. The wings are omitted at the middle of the fastener so as not to interfere with the mortar or tuck-pointing of the vertical joints which, as indicated in Figure 7, will intersect the horizontal joints at the points at which these fasteners are applied. The nail extends through an aperture at the middle of the length of the flat body portion, 21, so that its shank may be driven through the backing, 3, and into the sheathing, 2, with its head serving to draw the fastener wings, 22, into firm contact with the sloping or beveled edges of adjacent tiles. The distance of the wings from the securing nail, 20, and also their ability to yield somewhat in their angular relation to the middle portion, 21, particularly if the device is made of sheet metal, will avoid any possibility of cracking or chipping of the tile in the process of applying the fastener.

Figures 9, 10 and 11 illustrate still another form of fastening means which consists of a series of parallel wires, 30, extending horizontally over the backing, 3, in spaced relation to its outer surface and parallel to each other. For thus mounting these wires they may be provided with specially formed nails, 31, preferably bent at right angles at 32 and then curved around the wire, 30, each nail thus having an eye by which it is permanently attached to the wire with capacity for sliding along it to any convenient position. Preferably, these nails will be driven into the backing, 3, and sheathing, 2, at the vertical joints between the tiles, though not necessarily at each vertical joint, and two parallel wires, 30, will be mounted in each horizontal joint with one wire engaging the lower edge of the tile above it and the other wire engaging the upper edge of the tile below it. Figure 9 being a section taken at one of the vertical joints, shows one of the tiles, 35^a, in end elevation, and indicates the position of two of the nails, 30, with their eye portions slightly overlapping this end of the tile, 35^a. The other tiles, 35, appear in section in this view.

Figure 11 shows the same form of fastening wires, 30, applied to tiles, 45, each having two opposite edges grooved or channeled instead of inclined or beveled, as in the preceding views. This provides a more definite engagement of the tile with the wires, and also permits of somewhat

closed joints, 45x, between the tiles, if desired, though it will be evident that the tiles may be spaced apart at any preferred distance. With this type of tile the supporting molding, 4, at the lower edge of the wall, may be of the form heretofore described, and as shown in Figure 9, or it may be shaped as shown in Figure 11 to conform more nearly to the grooves in the edges of the bottom curve of the tiles, 45.

It will be recognized that various further modifications in the form of the fastening means may be made without departing from the spirit and principle of the invention, and it will be understood that in any event the fastening means will be disposed wholly below or back of the plane of the outer surface of the tiles so as to be entirely concealed by the filling of mortar at 7 when this is applied to complete the wall surface.

I claim:

1. A wall structure which includes a backing and a layer of separate individual facing tiles disposed flatly in close contact with the outer surface of said backing, said tiles being arranged in rows and spaced from each other, two opposite edges of each tile being formed with outwardly facing surfaces inclined with respect to the face of the tile and securing means each comprising a flat, sheet metal body with flaring wings oppositely inclined to said body to engage the said inclined surfaces of adjacent tiles, and a headed shank penetrating the body to secure it to the backing.

2. A wall structure which includes a backing and a layer of separate individual facing tiles disposed flatly in close contact with the outer surface of said backing, said tiles being arranged in rows and spaced from each other, two opposite edges of each tile being beveled converging outwardly, and securing means each comprising a flat body with yieldably flaring wings formed to engage the oppositely beveled edges of adjacent tiles, and a headed shank penetrating the body portion to secure it to the backing.

3. In the combination defined in claim 1, said wings being disposed adjacent the end portions of the body and interrupted at its middle portion.

4. A wall structure which includes a backing and a layer of separate individual facing tiles disposed flatly in close contact with the outer surface of said backing, said tiles being arranged in rows with spaces between the tiles and between the rows, the spaces between the tiles of one row being staggered with respect to those in the next row, and securing devices each comprising a shank adapted to penetrate the backing and an oblong head dimensioned to fit the space between two rows of tiles, the shank being placed adjacent the space between two tiles of a row so that the oblong head engages three tiles simultaneously, and the tile edges being formed to afford lodgement for the edges of said head whereby the head will press the tiles against the backing.

5. A wall structure which includes a backing and a layer of separate individual facing tiles disposed flatly in close contact with the outer surface of said backing, said tiles being arranged in rows with spaces between the tiles and between the rows, the spaces between the tiles of one row being staggered with respect to those in the next row, and securing devices each comprising a shank adapted to penetrate the backing, and an oblong head having a flat body portion with yieldably flaring wings dimensioned to fit the space between two rows of tiles and engage the edges of adjacent tiles, said wings being disposed adjacent the end portions of the body and interrupted at its middle portion and the shank being placed adjacent the space between two tiles of a row so that the wings of the head engage three tiles simultaneously, the tile edges being formed to afford lodgment for the wings of said head whereby the head will press the tiles against the backing.

LESTER E. WILLSON.