Jan. 10, 1939. F. D. LIVERMORE 2,143,420

BUILDING CONSTRUCTION

Filed June 24, 1936

Fig. 1.

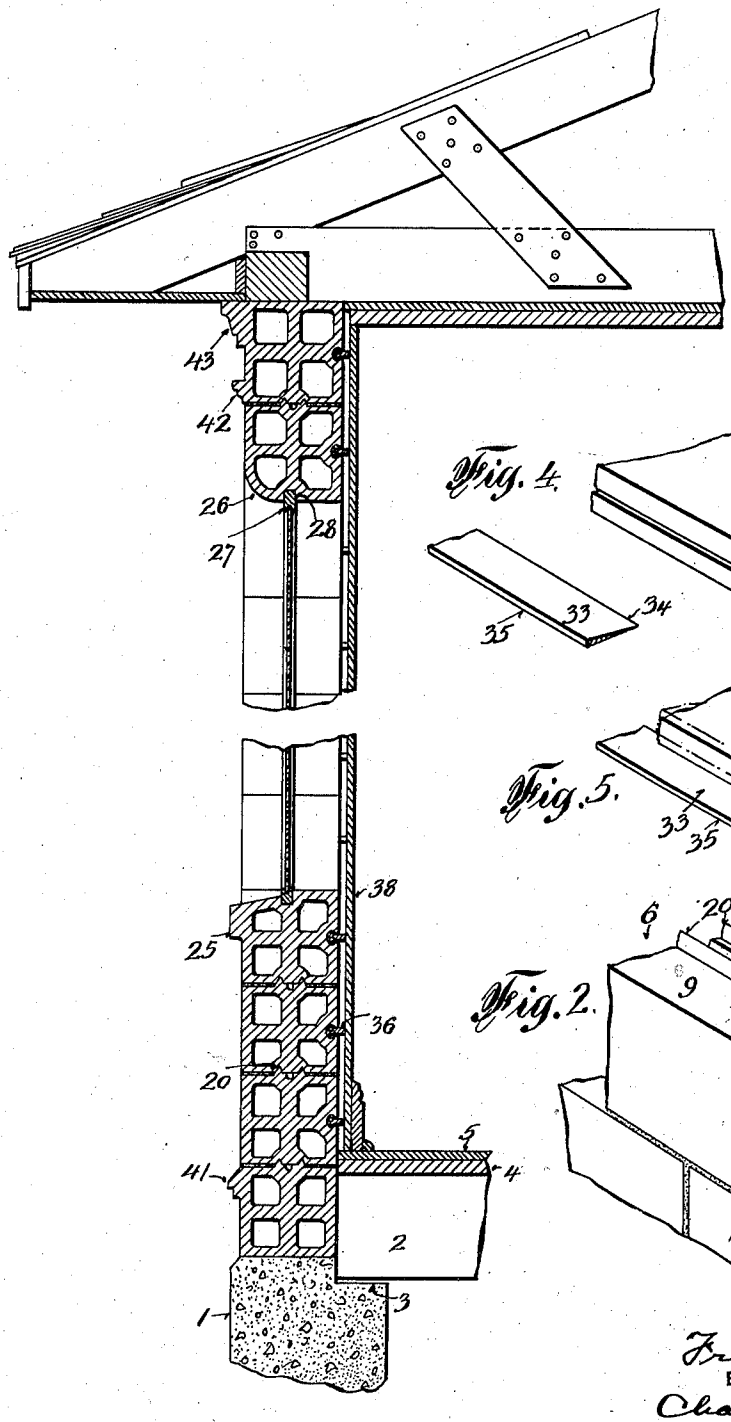


Fig. 3.

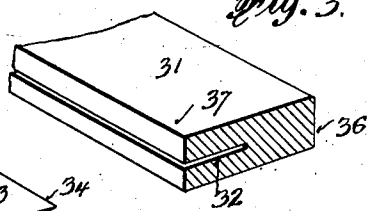


Fig. 4.

Fig. 5.

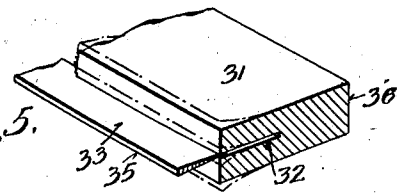
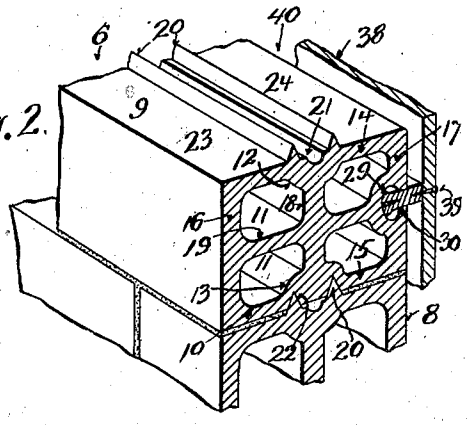


Fig. 2.



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2,143,420

BUILDING CONSTRUCTION

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3 Claims. (Cl. 72—105)

The object of my invention is to provide a building wall construction which is simple to assemble or set up, which is inexpensive to manufacture, and which will provide effective protection against climatic elements.

The present wall is constructed of, preferably, one row of tiles laid one upon the other and secured to each other by suitable cement or mortar to unite them in a rigid whole. The tiles are preferably of hollow construction to provide ample longitudinal spaces therein for the circulation of air and to reduce the weight of the tiles over solid members, to facilitate handling of the tiles in relatively large units, and also to reduce the amount of material in the tiles. While a wall structure may be made of my improved tile having a plurality of rows or layers, I prefer to make the tiles of sufficient width so that a single tier of tiles will be sufficient to constitute the complete wall of the building.

Ordinarily the tiles will be made much wider and larger in other respects than ordinary building brick. The present tiles may be set up by skilled bricklayers, but the construction is such that even unskilled labor may be employed for this purpose. For this reason the tiles are made with projections extending lengthwise thereof, which interlock with grooves of an adjacent tile, these projections and grooves serving to guide or control the position of one tile in relation to the other, in order that they may be built one upon the other in accurate positions.

I form a groove in each tile extending longitudinally thereof between the interlocking projections to form a space for the collection of any moisture which may work by capillary action toward the middle of the tiles in order to prevent this moisture from reaching the interior of the building. Preferably, the interlocking projections and the moisture collecting groove are formed along the middle line of the tiles.

The cement or mortar for uniting the tiles one to the other is applied to the surfaces of the tiles on the spaces on each side of the interlocking projections, and the interlocking projections and grooves are so proportioned and disposed that they will guide the tiles to accurate position when the desired layer of cement is applied to the top surface of each tile. In other words, the interlocking projections and grooves are effective when the desired layer of cement or mortar is applied to the top surface of the tiles.

Another object of my invention is to provide simple and efficient, as well as strong, means for mounting the furring strips to the inside of the tiles. These furring strips are provided with wedges and the tiles are provided with slots and with grooves so that when the furring strips are driven into the slots of the tiles the wedge will be forced into a cut in the furring strip and will spread the portion of the furring strip which is in the groove of the tile and thereby lock the furring strip so that it cannot withdraw from the tile. This will hold the furring strips on the tiles with great force and it permits the furring strips to be applied directly to the tiles without any intervening structure and without the use of nails or the like.

The furring strips preferably project into the building a slight extent from the inner faces of the tiles, and plaster board or other wall material may be nailed directly onto these extensions of the furring strips. In this manner I construct the entire wall structure of a column of tiles with furring strips and with the wall material all assembled in a quick and efficient manner. By having the furring strips extend beyond the tiles within a room, a space for air circulation is left between the wall structure and the tiles.

I prefer to use tiles having their outer faces vitrified or otherwise finished, to produce a pleasing effect, and also to exclude moisture as much as possible from the entire wall structure. Other features and advantages will be set forth in the following detailed description of my invention.

In the drawing forming part of this application,

Figure 1 is a cross section of a building wall embodying my invention, the view being taken to include a window sash,

Figure 2 is an enlarged perspective view of a portion of a wall,

Figure 3 is a perspective view of a portion of a furring strip used in connection with my invention,

Figure 4 is a perspective view of a portion of one of the wedges to be associated with the furring strip, and

Figure 5 is a perspective view of a portion of a furring strip and a portion of one of the wedges in position ready to be driven into locking engagement with the tiles.

As far as the foundation structure of the building is concerned, it may conform with present practice. I have shown a concrete foundation wall 1, on which the building wall embodying my invention may be constructed. I have shown an ordinary floor beam 2 which seats in a recess 3 of the foundation wall 1 and this beam and others

like it support the floor which I have shown as consisting of a primary layer 4 and a top layer 5.

It will be understood that the tiles used in the construction each consists of a rectangular body 6 having an outer face 7 which may be decorated or colored or faced with a vitrified surface. Each tile has an inner face 8 which faces the interior of the building; a top face 9, and a bottom face 10. Longitudinal air spaces 11 extend lengthwise entirely through the tiles and while these spaces may take various shapes and numbers I have shown four longitudinal spaces 11 generally of rectangular shape but with the upper corner 12 rounded and with the lower corner 13 rounded.

These spaces or channels are defined by the top and bottom walls 14, 15 of the tile, the front and rear walls 16, 17 and the cross webs 18, 19. Tiles of this character may be made in well known pug mill and auger machines in continuous lengths from which the individual tiles are cut. Extending lengthwise along what may be called the top of each tile, I provide two parallel ribs or extensions 20, of V shape in cross section and disposed on opposite sides of the median line of the tiles and near the median line. Between these projections or ribs I show a longitudinal groove 21 extending below the plane of the top face of the tile and disposed intermediate the guiding projections 20. Extending upwardly from what may be called the bottom face of each tile I have provided V shaped slots 22 to receive the V shaped projections 20 of a tile above, and each tile has these V shaped grooves on its bottom side. Preferably, these projections 20 and their grooves 22 extend the full length of each tile.

When the tiles are laid up to form a wall as shown in Figure 1, cement or mortar is placed along the two surfaces 23, 24 which constitute the top side of each tile outside or beyond the V shaped projections 20 and preferably there is no cement or mortar applied to the V shaped projections 20 or the grooves 21 so that the latter remains open or empty when the wall is assembled. When a thin layer of cement or mortar has been placed on the surfaces 23, 24 and spread evenly thereover, another tile is placed on top of the one so coated and is pressed down upon it so that the projections 20 of the lower tile are received into the grooves 22 of the one applied over it and these grooves and projections are so proportioned that they will fit snugly when the upper tile has been placed on the lower tile and when the cement or mortar is of such thickness as to fill the spaces left between the surfaces 23, 24 of one tile and the surfaces of the tile above. In other words, the locking projections and their grooves fit snugly and control the position of the upper tile in relation to the lower one with allowance for the intervening plaster or cement which cover the surfaces inside and outside of the guiding projections as shown in Figures 1 and 2.

As the projections 20 and their receiving grooves may be accurately formed when the tiles are being made, the projections will control the accurate positioning of one tile upon another so that less skill is required in the laying up of the tiles than is required in making a wall from ordinary building brick because the tiles will be properly aligned by the interlocking projections and grooves. A wall constructed of this tile may be laid up very rapidly and with little skill on the part of the mechanic. If desired, some of the tiles may be provided with a sill projection 25 as shown in Figure 1 and with a curved outer surface 26 and these particular tiles, which are to define the opening for a sash or window 27 may have grooves 28 formed therein to receive the sash frames.

Each tile is provided near its inner side with a longitudinally extending groove 29 running preferably the full length of each tile, and there is a slot 30 communicating at one end with the groove 29 and opening at the inner face side of each tile, the slot being of narrower width than the groove. Furring strips 31 which may be made of wood or other material which is susceptible to being deformed in the manner here described are provided with sawcuts or slots 32 extending inwardly from one edge and partway through the furring strips. I provide wedges 33 preferably in the form of long strips which are tapered in width and the narrow edges 34 of these wedges are started into the open sawcut 32 of each slot 30 as shown in Figure 5 preparatory to applying the furring strip to the wall.

When the furring strip is thus prepared with a wedge it is presented to the open side of the slot 30 of one or more tiles in a horizontal row and the furring strip is so placed that the exposed portion of the wedge strip 33 extends through the slot 30 and the back edge 35 of the wedge strip lies against the rear or left wall of the groove 29 in one or more tiles arranged in the same horizontal row.

The front edge 36 of the furring strip may then be tapped with a hammer at different points along its length to drive the furring strip further into the slot 30 and into the groove 29. As the furring strip is thus driven in, the wedge, abutting at its rear edge against the wall of the groove 29 is prevented from moving further so that the furring strip moves in relation to the wedge, and the wedge is thus moved further into the slot 32 causing the portions 37 of the furring strips which lie in the groove 29 to be spread so that this portion of the furring strip becomes thicker than the slot 30 and thereafter the furring strip cannot withdraw through this slot because it is held and locked by the wedge. Thus, the furring strip is securely and firmly united to the tiles by the action of the wedges and without the use of nails or other securing means.

The wall 38 which may be of wood or plaster board or any other material suitable for the interior wall of the building, is applied against the furring strips, i. e., against the inner edges 36 thereof, and this board is attached to the furring strips by nails 39 or other means. If the furring strips project beyond the inner faces of the tiles as shown in Figure 2, when the furring strips have been driven into place then the wall board will be slightly spaced from the tiles to provide an air space 40 to avoid direct contact of the wall boards with the tile structure.

It will be obvious that the furring strips may be clearly applied to the tiles without nails or other metallic means and that the furring strips will be firmly secured throughout their length to the tiles. When the wall boards have been nailed into place the entire wall structure will be complete. The inner surfaces of the wall boards may be coated with plaster if they are not plaster board, or they may be covered with wall paper or paint or any other desired interior finish.

The purpose of the grooves 21 in the tiles is to prevent any moisture which may work throughout the cement or mortar on the left half of the tiles in Figures 1 and 2 by capillary action from

reaching the inner side of the wall because any such moisture will collect in the groove 21 and remain until evaporation eliminates it.

Any ornamental effects may be provided on the exterior of the tiles. For instance, I have shown the moulding 41 arranged along the lowermost row of tiles and I have shown other mouldings 42 and 43 along the uppermost row of tiles for ornamental purposes. It will be obvious that other effects may be produced, all in combination with the structural features of my invention. I prefer to make the tiles about sixteen inches long in order that the units will be about as large as the mason may conveniently handle in order that the total number of tiles in a given wall will be much less than the number of bricks in a brick wall of the same size.

A dwelling house may be constructed with walls having the features herein described in much less time and with much less skill than a building could be constructed of ordinary building brick with walls of the same thickness as one made with the present tiles. Preferably, the tiles are of a width approximately twice that of ordinary building brick in order that the thickness of the wall constructed with a single tier of tiles will be approximately the thickness of a wall constructed of two rows of ordinary building brick. The wall will be as substantial, or even more substantial, than one made of ordinary building brick, and it will have the advantage of the longitudinal air spaces 11 in the tiles which not only reduces the total weight of the wall but allows air circulation through the spaces which is advantageous for insulating purposes against weather changes, and also these spaces reduce the tendency of the wall to absorb moisture.

In order for the furring strips to be applied to a row of tiles in the manner here described, it is necessary that the tiles be properly aligned and this is accomplished by the co-operation of the projections 20 in the slots 22, making it possible to align the tiles and therefore bring the slots 30 of all the tiles of a row in a straight line.

Having described my invention, what I claim is:

1. A building wall structure composed of tiles laid in rows, the inner side of the tiles having grooves extending along the tiles, and slots extending from the inner faces of the tiles to said grooves and being of narrower width than the grooves, furring strips having a slot extending inwardly from one of its edges, and a wedge member engaging in the slot of the furring strip, the furring strip and wedge being driven through said slot in the tile and into the groove in the tile in a direction laterally of the plane of the tiles whereby the furring strip is forced over the wedge while the wedge abuts against the bottom of the slots in the tiles to cause the spreading of the furring strip to prevent its withdrawal from said slot.

2. A building wall structure composed of tiles laid upon each other in horizontal rows, the inner side of the tiles having grooves extending along the tiles, and slots extending from the inner faces of the tiles to said grooves and being of narrower width than the grooves, furring strips having a slot extending inwardly from one of its edges, and a wedge member engaging in the slot of the furring strip, the furring strip and wedge being driven through said slot in the tile and into the groove in the tile in a direction laterally of the plane of the tiles whereby the furring strip is forced over the wedge while the wedge abuts against the bottom of the slots in the tiles to cause the spreading of the furring strip to prevent its withdrawal from said slot, and a wall structure attached to the exposed edges of said furring strips.

3. A building wall structure composed of tiles laid in rows, the inner side of the tiles having grooves extending along the tiles, and slots extending from the inner faces of the tiles to said grooves and being of narrower width than the grooves, furring strips having a slot extending inwardly from one of its edges, and a wedge member engaging in the slot of the furring strip, the furring strip and wedge being driven through said slot in the tile and into the groove in the tile in a direction laterally of the plane of the tiles whereby the furring strip is forced over the wedge while the wedge abuts against the bottom of the slots in the tiles to cause the spreading of the furring strip in the tile grooves to prevent its withdrawal from said slot, said furring strips projecting inwardly from the inner face of the tiles, and a wall structure attached to the projecting edges of said furring strips so as to lie in spaced relation to the tiles.

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