United States Patent

Winfree

[15] **3,641,731**

[45] **Feb. 15, 1972**

[54] BRICK WALL CONSTRUCTION

[72] Inventor: **Jimmie J. Winfree**, Peach Bottom, Pa.

[73] Assignee: **Winfree Associates, Inc.**, Wilmington, Del.

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[21] Appl. No.: **47,355**

[52] **U.S. Cl.** **52/747**, 52/105

[51] **Int. Cl.** **E04g 21/22**

[58] **Field of Search** 52/747, 749, 741, 603, 105

[56] **References Cited**

UNITED STATES PATENTS

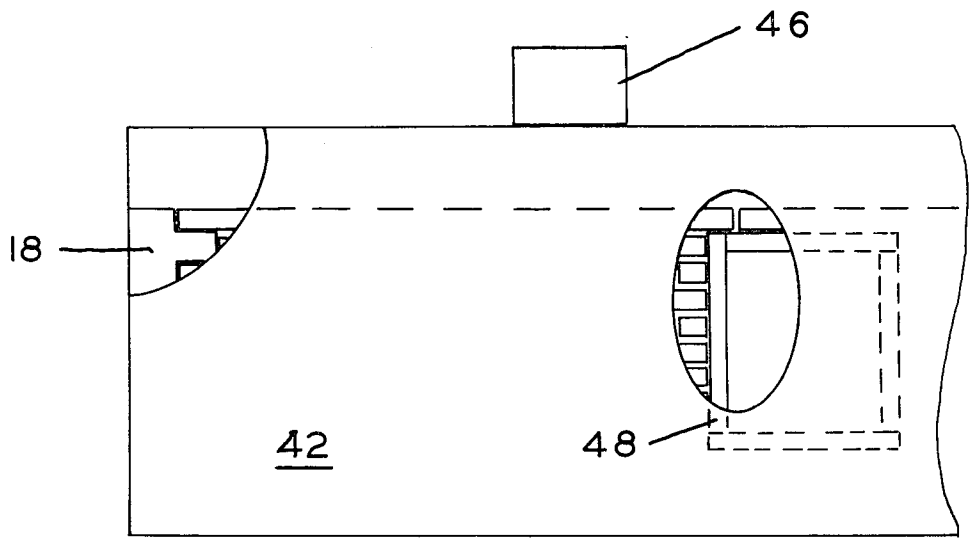
860,927	7/1907	Mann	52/747
2,428,374	10/1947	Malthouse	52/747
3,210,445	10/1965	McClarney	52/747 X
3,374,589	3/1968	Neal	52/105

Primary Examiner—Price C. Faw, Jr.
Attorney—Clifford B. Price

[57] **ABSTRACT**

A brick wall is laid by stacking up a plurality of bricks without mortar. Retaining structures are used on the front and back faces of the stack of bricks, and mortar is introduced onto the top of the stack of bricks and will flow down to fill the voids between the bricks. The bricks may have special protrusions to space the bricks apart or special spacers may be used to space the bricks apart the required distance. Appropriate forms are provided for openings in the brick wall and end joints in the brick wall.

5 Claims, 9 Drawing Figures



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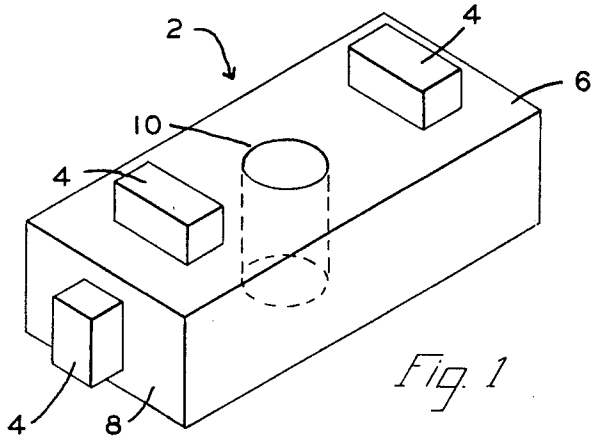

Fig. 1

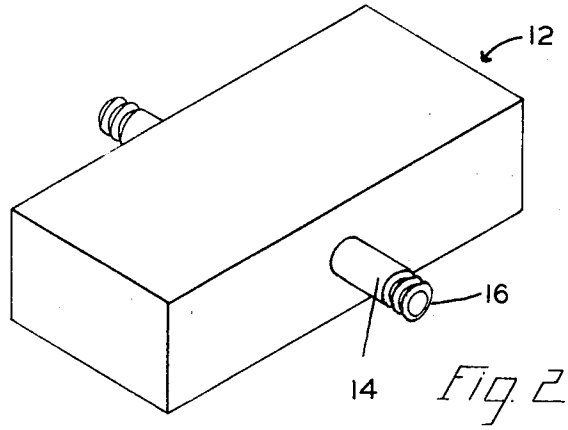

Fig. 2

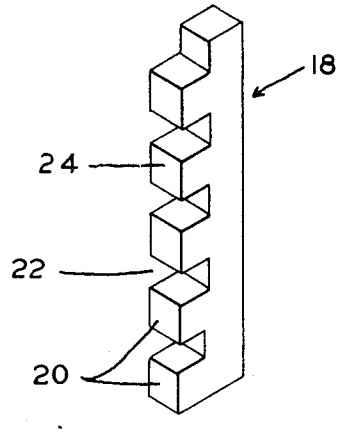

Fig. 3

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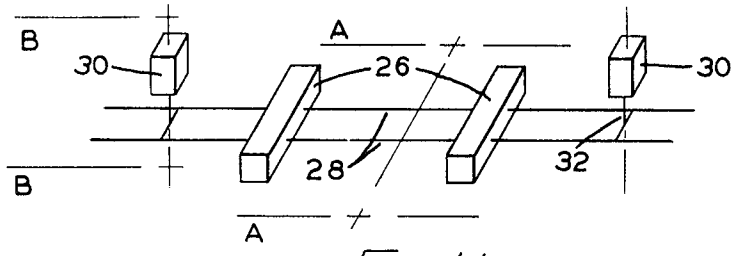

Fig. 4

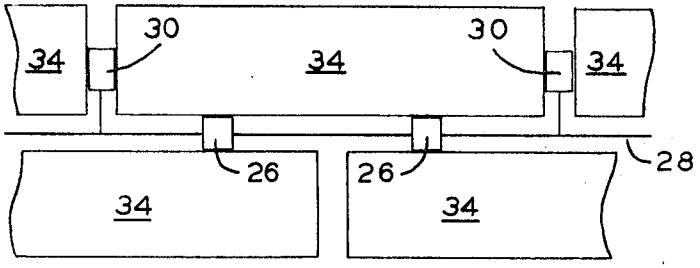

Fig. 5

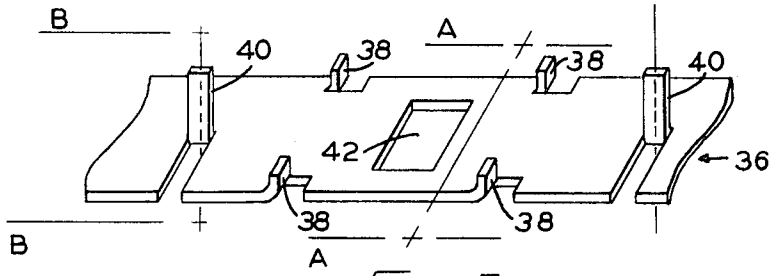

Fig. 6

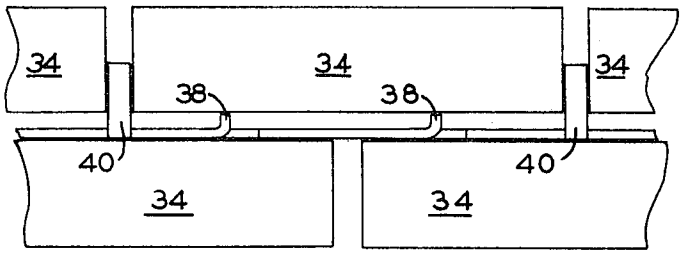

Fig. 7

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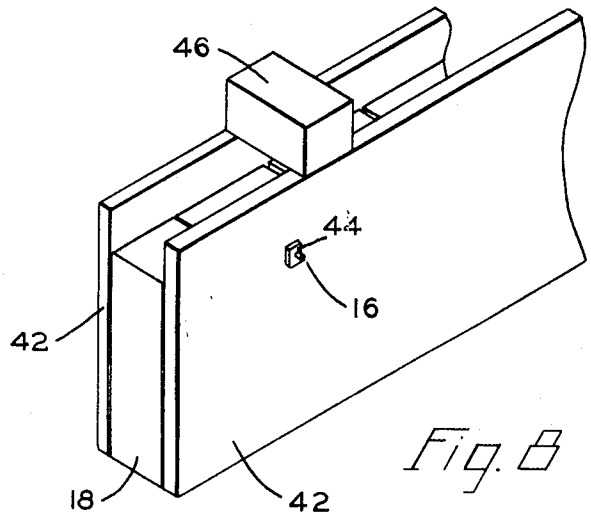

Fig. 8

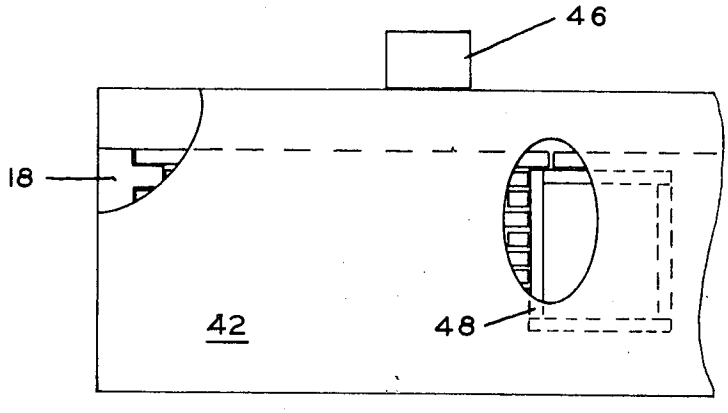

Fig. 9

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BRICK WALL CONSTRUCTION

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention is directed to a brick wall construction and, more particularly, to a brick wall construction wherein the bricks are stacked without mortar and the mortar is later added to the stack of bricks.

2. Description of the Prior Art

U.S. Pat. No. 1,439,446 discloses a brick structure with protrusions. The protrusions are used to help the bricklayer lay the brick with the proper spacing between adjacent bricks. U.S. Pat. No. 860,927 discloses another brick with protrusions for the purpose of stacking bricks with a proper spacing. The first-mentioned patent discloses a structure which was not specifically designed for the mortarless stacking of a brick wall, and the protrusions on that brick do not lend themselves readily to the flow of mortar past the bricks. The latter patent discloses a brick with protrusions, and this brick may be used with a mortarless wall, but the protrusions are such that the wall would be extremely unstable until mortar is added.

The use of spacers in a brick wall structure is shown in U.S. Pat. No. 3,374,589. This spacer will assist in the spacing of the individual courses or rows of bricks, but fails to provide any structure for the spacing of individual bricks within a row. Other structures are available for insertion into a brick wall; but in most cases, these structures are used for reinforcing purposes and not for spacing purposes.

U.S. Pat. No. 2,428,374 discloses one technique for erecting a brickwork structure. Appropriate forms are used to form joint structures for the brick wall. However, this patent discloses a techniques which involves the laying of a brick wall on a flat surface with the later erection of the brick wall into a vertical plane. U.S. Pat. No. 860,927 discloses a technique for laying a brick wall without mortar and then subsequently adding the mortar. However, this patent is apparently the basic patent in the field and only teaches the rudimentary technique. Finally, U.S. Pat. No. 3,210,445 discloses the latest technique for stacking up a brick wall and then subsequently adding mortar. Special bricks are used with magnets, and these bricks are fastened to a metallic form to hold the bricks in a prearranged pattern. Mortar is then added to the brick structure. It would appear that this patent has disclosed a technique which goes to the opposite extreme; that is, a technique involving a highly involved and complicated structure for laying special bricks in a brick wall construction with the later addition of the mortar to hold the bricks together.

It is the object of the invention herein to provide a relatively simple technique for laying a brick wall without mortar, then subsequently adding the mortar to hold the bricks together. This technique is carried out by the use of special forms to provide the required openings and joints. Also, this technique can be carried out with a relatively simple, special brick or with standard bricks and spacers.

SUMMARY OF THE INVENTION

The invention herein is directed to the brick wall construction which utilizes certain special construction materials and certain techniques. The brick wall construction may be made with the use of a special brick that has protrusions to provide the proper spacing between a plurality of bricks stacked up in a wall construction. The protrusions are arranged to provide stability to the wall while it is without the mortar and at the same time to facilitate the rapid flow of the mortar through the spaces between the bricks. The brick may also be provided with a strategically located hole to assist in the flow of the mortar. Special forms may be used for providing a proper type of joint structure to facilitate a plurality of sections of walls to be properly joined together and for corner structures to be properly made. Furthermore, there is provided a particular tie structure for holding the forms adjacent the brick wall while the mortar is being added thereto.

The invention herein also contemplates the use of normal bricks wherein spacers are provided to space the bricks the proper distance apart when stacked in the wall structure. The spacers provide for the proper spacing not only of the joint between the horizontal rows of bricks, but also provide the proper spacing between the bricks within a row. Two separate embodiments of strip-type spacers have been devised and can be used to accomplish the spacing purposes.

Finally, the invention herein embodies the technique of stacking up the bricks, providing the appropriate openings and forms at strategic points, then the addition of the mortar with appropriate structures to assist in the rapid flow of the mortar into the voids between the bricks stacked up in the wall construction.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a special brick with protrusions;

FIG. **2** is a perspective view of a special tie structure to hold together wood forms on a brick wall;

FIG. **3** is a perspective view of an end form for forming a joint structure on a brick wall;

FIG. **4** is a perspective view of a spacer construction;

FIG. **5** is a front view of a brick wall with the spacer structure of FIG. **4** therein;

FIG. **6** is a perspective view of another embodiment of the spacer structure;

FIG. **7** is a front view of a brick wall with the spacer of FIG. **6** therein;

FIG. **8** is a perspective view of a brick wall being laid according to the inventive technique; and

FIG. **9** is a front view of the brick wall of FIG. **8**.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. **1**, there is shown a special brick which may be used with the wall construction herein. The brick **2** is formed of a fired clay material or other equivalent type material and is generally of the same size and configuration as a conventional brick. Rib structures **4** are placed on the top face **6** and end face **8** of the brick. There are two ribs on the top face **6**, and they extend transversely across the brick, having their longest dimension extending parallel to the shortest dimension of the top face. The length of the ribs is less than the width of the brick, and the length is so selected that the bricks will provide a stable base upon which other bricks may be rested. It is important that when a plurality of the bricks are stacked one upon the other that the projections be of a sufficient size that the brick wall will be stable enough to stand by itself until such time as forms are placed on opposite faces of the brick wall. However, the length of the ribs cannot be too long or other wise they will obstruct the flow of the mortar, which will be moving along the long dimension of the top face. The rib on the end face **8** has its longest dimension in the same direction as the end face smaller dimension. In other words, it extends perpendicularly from the plane of the top face. Here the size of the rib is not too critical because the rib does nothing but space and is not required for stability of the wall. The ribs are of a thickness such that they will space adjacent bricks from brick **2** a distance equal to the normal mortar joint thickness between two bricks. As indicated above, the ribs further provide stability to the brick wall as it is standing unsupported by mortar and forms, and further, the ribs must not interfere with the flow of mortar through the voids between the bricks when they are stacked up in the wall construction. A hole **10** may be centrally located in the brick to assist in the flow of mortar through the brick wall. Normal brick wall construction has each course staggered one-half brick; and, therefore, the course which is positioned above and below brick **2** will have a spacing between two adjacent bricks located centrally of brick **2**. Therefore, mortar flowing down between the two bricks of the upper course cannot only spread out laterally across the top face of brick **2**, but will also flow through hole

10 to the space between two bricks on the lower course below brick 2. Such a feature will facilitate the flow of mortar into the brick wall construction to fill up the voids between the bricks.

In FIG. 2, there is shown a form tie 12 which could be of wood or metal or some other material that mortar will not readily adhere to. This form tie is laid in the brick wall just like a normal brick. It has extending from its side rods 14 with threaded ends 16. The rods will extend through the flat forms which are placed up against the brick wall, and nuts will be used to secure the forms to the brick wall. In effect, the form tie merely provides a simple means for fastening the forms to the brick wall assembly prior to the introduction of the mortar. After the mortar has set up and the forms are removed, the tie element 12 can be readily removed from the brick wall and a regular brick inserted therefor.

FIG. 3 is directed to an end form 18 which is used to form the end of the brick wall at a corner or to form a splice joint in a continuous brick wall. As was indicated above, bricks are normally laid with each course staggered one-half brick. Consequently, at a corner or any break in a brick wall, there will be a need for a staggered brick arrangement to which the next continuing section of the brick wall may be joined. The end form 18 has a series of projections 20 which are spaced apart in the area 22 a distance of one brick height. Into this area 22 there is inserted one-half of the brick alternate courses. Against the face 24 of each projection 20 there is inserted the end of a brick in each alternate course. Therefore, it can be readily seen that when one comes to the end of the form there must be provided some means to prevent the mortar from running out of the voids between the bricks stacked up within the form. At the end of the form, the bricks will be stacked up in a staggered or corrugated structure form. The end form 18 helps support the bricks at the end and also seals off the voids so that the mortar flow will stop at the end of the bricks. It can be readily seen that when the brick wall is continued a new stack of bricks is laid up and it can be readily keyed into the previously mortared section of wall.

As was indicated previously, a special brick construction is not necessary for the carrying out of the wall construction herein. Spacer structures may be utilized to position conventional bricks the required distance apart to form the mortar joints. There must be provided on the spacer a grouping of projections or means for spacing the bricks the required distance apart and providing a stable rest for the bricks so that the wall without the mortar can stand in a relatively stable manner. In addition, between these groupings of projections which support the bricks in a stable manner there must be provided further projections or means for spacing the bricks within a row the required distance apart.

Referring to FIG. 4, there is shown one type of spacer wherein a plurality of blocks 26 are used to provide a stable mount for a brick placed upon the blocks and at the same time to space that brick and the underlying brick apart the distance of a normal mortar joint. The blocks are held together by two strands of thin wire 28. Between each grouping of two blocks 26, which are grouped together in a distance less than the length of a brick, there is positioned another block 30 which is fastened by wires 32 to the twin wires 28. This block extends between two adjacent bricks in a single row and properly spaces these bricks apart. Therefore, there will be two blocks 30 positioned on either side of each pair of blocks 26, these blocks 30 being spaced apart the approximate distance of a brick length. The blocks 26 will have a length less than a brick width while the blocks 30 will have a length less than a brick height. The brick length is shown by the lines A while the brick height is shown by the lines B. The center lines through blocks 30 are slightly over a brick length apart. In FIG. 5, there is shown the front face of the brick wall construction wherein conventional bricks 34 are laid up with the spacer of FIG. 5 therebetween to provide the proper mortar joint spacing. The blocks 26 provide a stable rest and proper spacing for the bricks in different courses while the blocks 30 provide the proper spacing between the adjacent bricks in the same course. The wires 28 join together a continuous run of spacers between each course of bricks.

Referring to FIG. 6, there is shown an alternate form of the spacer structure shown in FIG. 4. Here the spacer is stamped from a continuous strip of metal 36 in which there has been punched appropriate tabs to perform the function of the blocks 26 and 30 of the previous embodiment. A plurality of tabs 38 are stamped out of the strip 36 to provide spacers and rests for bricks in a course. Other tabs 40 are stamped out of the same strip of metal at the required distance apart to provide spacers for individual bricks in the same course. The strip could also be provided with apertures, such as aperture 42, to help in the flow of the mortar from one course down to the next course. FIG. 7 is a front view of a plurality of bricks 34 laid up with the spacer 36 positioning the bricks the required distance apart. It will be seen that the tabs 38 support the bricks in a stable manner and space them the required distance apart while the tabs 40 space adjacent bricks in the same row the required distance apart.

In FIG. 8 there is shown a view of a wall construction with the forms in position. The end form 18 is in position at the end of a stack of bricks which constitutes the wall structure. These bricks may either be the special brick 2 or conventional bricks with spacer therebetween. On either side of the brick wall, there is positioned flat forms 42, which prevent the mortar from spilling out over the faces of the brick wall. The upper part of the forms is open so that mortar may be dumped therein. The bottom of the form is either sitting on a foundation or an underlying brick wall. The threaded ends 16 of the tie blocks are shown with nuts 44 mounted thereon to hold the flat forms in position against the stack of bricks. A vibrator structure 46 is placed atop the forms to enable vibration to assist in the distribution of the mortar into the voids between the bricks. Referring to FIG. 9, there is shown a front view of the wall construction of FIG. 8 with certain parts broken away for clarity. The form 42 is held in place by the nuts 44 on the internal tie members, which are laid into the brick wall, each tie member being a substitute for a brick. As shown in the breakaway section to the right of the FIGURE, a box form structure 48 is placed within the brick wall to provide an opening for a window or a door. The box structure extends from one form the other form and prevents mortar from spilling into the void within the box. The bricks are stacked up around the form just like a bricklayer would lay the bricks if he were laying the bricks around the form 48. In the breakaway section of the left-hand side of FIG. 9, there is shown the end form 18 and the manner in which it mates with the corrugated break in the brick wall. As has been previously indicated, the alternate courses of the brick wall are offset from adjacent courses. The breakaway section also shown some type of appropriate spacing structure spacing the bricks one from the other to provide the voids into which the mortar must flow.

After the bricks have been stacked up in the manner shown in FIG. 9, with the appropriate end form and flat forms, the mortar is introduced into the top of the forms. The mortar then flows down into the voids between the bricks. The mortar is generally in a liquid state and will readily flow into the voids. The movement of the mortar into the voids is greatly assisted by the use of the vibrator 46 which, through vibratory action, greatly enhances the mortar movement into the voids. After the mortar has flowed down into the voids and has had a chance to set up, the vibrator, flat forms and other forms are removed, the mortar joints are dressed and the bricks are washed to remove any mortar which may have seeped between the bricks and flat form face. It is obvious that a dual flat form structure is not necessary if a brick wall is placed up against a backup wall of cinder block or some other type of structure. In that circumstance, a form for the front facing of the brick would be used alone, and the backup wall would constitute the equivalent of the second form.

What is claimed is:

1. The method of laying a brick wall comprising the steps of stacking up a single vertical row of bricks, providing a spacing means between each horizontal rows of bricks and each brick in the horizontal row, placing a flat form on at least one side of said vertical row of bricks, using an end form at the end of said vertical row of bricks to close in the end of the vertical row of bricks and to form the end of the vertical row of bricks with a corrugated structure wherein the adjacent horizontal rows of bricks are offset while the alternate horizontal rows of bricks end in the same plane, and pouring mortar onto the top of said horizontal row of bricks to fill in the space between the bricks.

2. The method of claim 1 wherein the form and bricks are vibrated to assist in getting the distribution of the mortar into all the spaces between the bricks.

3. The method of claim 2 wherein forms are provided in the vertical row of bricks to provide for doorways and window openings.

4. The method of claim 3 wherein the flat form is held in place by internal tie form holders incorporated in the vertical row of bricks.

5. The method of claim 4 wherein the spacing is accomplished by placing spacers between the bricks as the bricks are laid.

* * * * *