

Oct. 7, 1947.

E. G. MALTHOUSE

2,428,374

ERECTION OF BRICKWORK STRUCTURES

Filed Jan. 16, 1945

4 Sheets-Sheet 1

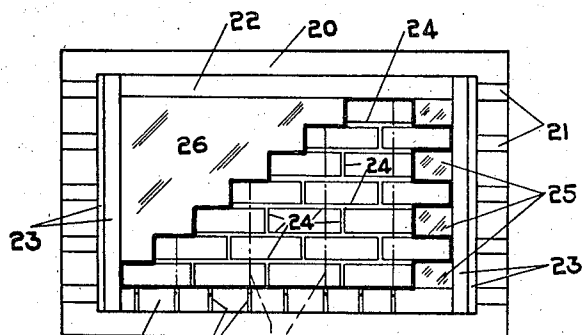


FIG. 1.

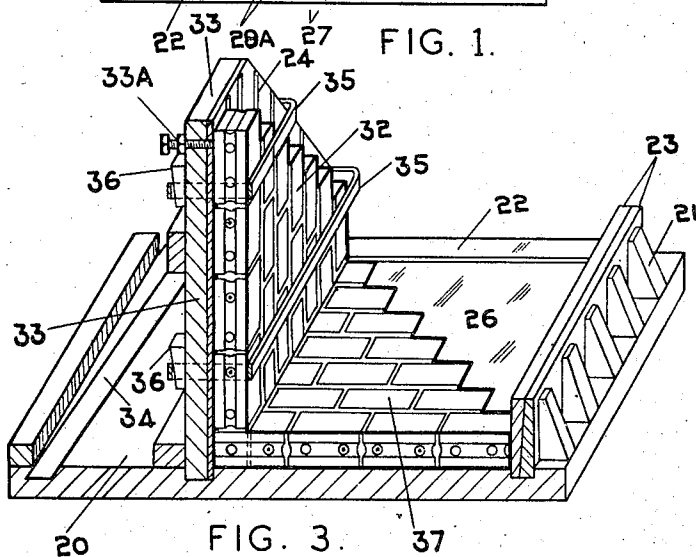


FIG. 3.

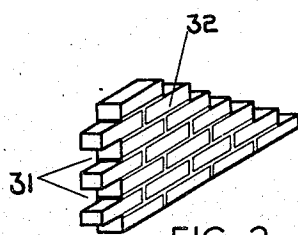


FIG. 2.

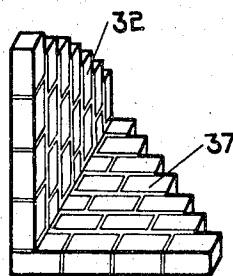


FIG. 4.

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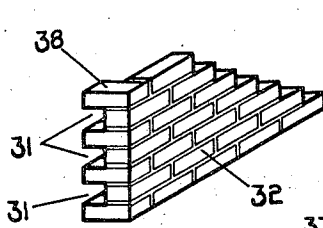


FIG. 5.

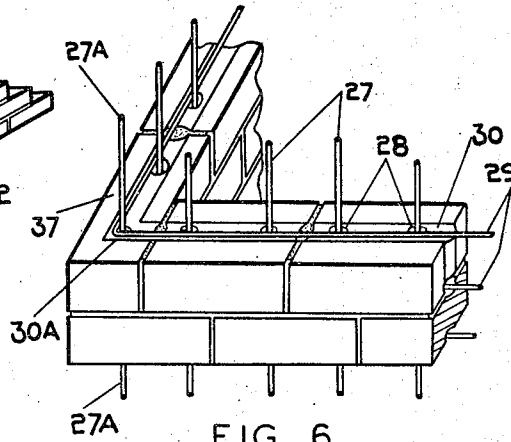


FIG. 6.

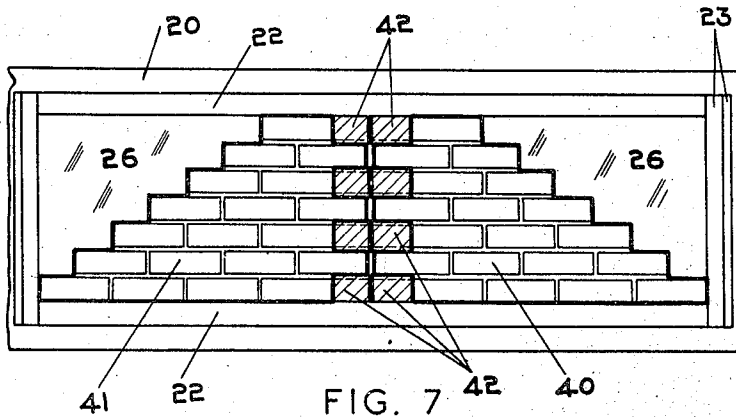


FIG. 7.

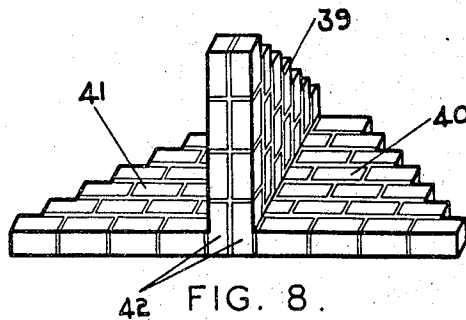


FIG. 8.

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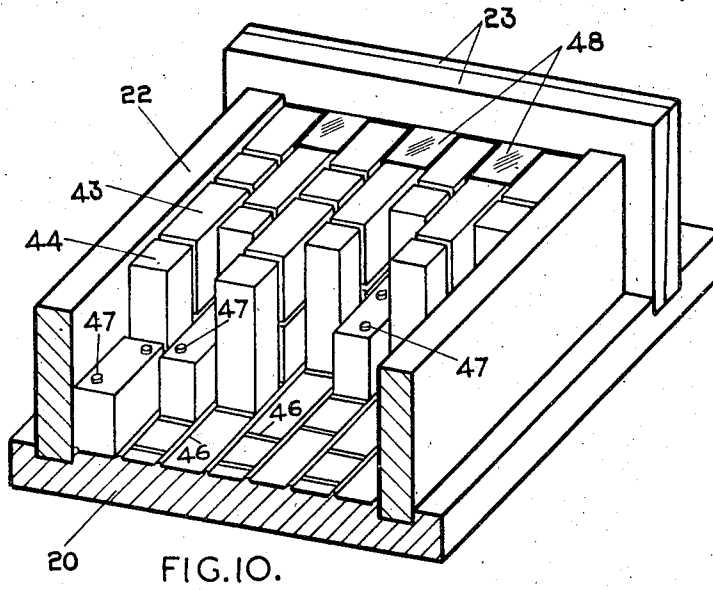
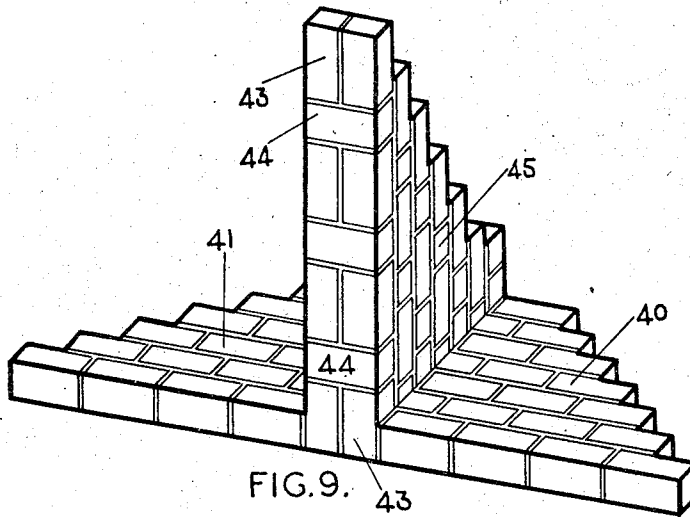
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ERECTION OF BRICKWORK STRUCTURES

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4 Sheets-Sheet 3



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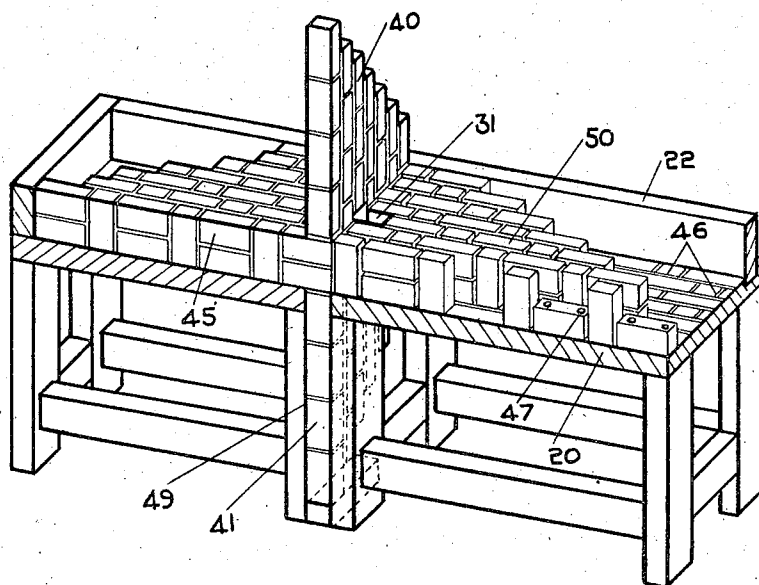


FIG. 11.

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2,428,374

ERECTION OF BRICKWORK STRUCTURES

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Application January 16, 1945, Serial No. 573,004
In Great Britain February 24, 1944

10 Claims. (Cl. 72—128)

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This invention relates to the erection of brickwork structures by the use of brickwork units of the type which are pre-formed by laying a number of the bricks on a templet or base with the brick faces destined to provide or to determine a surface of the structure in contact with the templet or base which has ribs or other projections locating the relative positions of the bricks and determining the width of clearance between their bonding faces, the assembly being re-inforced if desired by metal rods transverse to the courses engaging registering holes or grooves in the bricks, and fluid bonding material such as cement being grouted between the bonding faces of the bricks. The principal object of the present invention is to provide improvements in the manufacture of such pre-formed units whereby they may be used to form corners of the intended structure.

Another object is to provide improvements in reinforcing wall sections comprised in a pre-formed brickwork corner unit whereby the unit as a whole as well as its component wall sections may be reinforced.

Another object is to preform corner units for use in the erection of brickwork structures according to the method described in my co-pending application Serial No. 534,761.

A further object is to provide a preformed double corner unit in which two wall sections extend, one from each side of a central or intermediate wall section.

Another object is to preform a brickwork corner unit comprising four wall sections and four interior corners.

Other objects will become apparent from a perusal of this specification.

According to the present invention a brickwork corner unit comprising sections of adjacent walls is pre-formed by laying bricks on a templet or base, having ribs or projections locating the relative positions of the bricks, with gaps between the bricks at one end of the courses, by reinforcing and bonding the bricks thus laid to form one wall section, by supporting the section on the end or side edge containing such gaps with bricks bounding the gaps registering between the locating ribs of a like templet or base and by laying, reinforcing and bonding bricks to form a second wall section on the templet or base with the bricks at one end of courses filling the gaps in the supporting end or side edge of the first wall section and united to the bricks bounding such gaps by the bonding material.

Longitudinal reinforcing rods, parallel to the

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courses, are preferably contained in grooves along the bonding faces of the bricks and embedded in the bonding material. Such longitudinal reinforcing rods may extend continuously from one wall section to the other, the rods in the first wall section being bent to the requisite angle in the gaps between alternate courses and the bricks bounding or filling the gaps having transverse grooves to receive the bent rods.

Although the gaps between the bricks at one end of spaced apart courses in the first wall section may be produced in the plane of that wall section by merely not filling the smaller end spaces between the locating ribs or projections of the templet or base arranged to cause the bricks in adjacent courses to break joint by one half the length of a brick, they may be produced in the plane of the second wall section by setting on their ends bricks laid at the ends of spaced apart courses when laying the first wall section.

In all cases one or each of the wall sections preferably extends from the corner to a stepped end which is inclined to the line of the courses in order to facilitate erection of the corner units and to enable them to be used in erecting a brickwork structure by the method described in my co-pending application Serial No. 534,761.

A double corner unit, comprising three wall sections may be pre-formed and in this case the first wall section, with the gaps at one end of alternate courses, is preferably double the thickness of a single brick and a third wall section is laid and bonded thereto in like manner to the second but on the other side of the first section.

The pre-formed corner unit may comprise four wall sections and in this case some of the gaps at one end of courses in a central wall section of double the thickness of a single brick are left void when preforming the second and third wall sections of a double corner unit comprising bricks filling other of such gaps and the void gaps are filled by bricks of a fourth wall section laid on a templet or base to form a continuation of the first or central wall section.

The fourth wall section and continuation of the central one may be laid, re-inforced and bonded on a templet having a recess or pocket to receive one of the side wall sections of the double corner unit.

In all cases re-inforcing rods transverse to the courses, may engage holes in bricks of more than one wall section comprised in the corner unit.

The locating ribs or projections of the templet preferably delineate spaces slightly greater than the faces of the bricks and in pre-forming a wall

section each of the bricks is brought to bear against two of the projections which bear the same relationship to the other two in each of the spaces occupied by a brick.

A templet or base on which the second wall section is laid and having ribs or projections locating the relative positions of the bricks may be combined with means for supporting the first wall section, having the gaps at one end of courses, at the desired angle with the plane in which the second wall section is laid, reinforced and bonded. Such means may comprise a bracket or the like to which the wall section to be supported is temporarily attached, conveniently against adjustable contact points, by bands embracing the bracket.

In the accompanying drawings:

Figure 1 is a plan of a templet or base for laying a wall section to be incorporated in a corner unit according to the present invention.

Figure 2 is a trimetrical view of a wall section before incorporation in a corner unit.

Figure 3 is a sectional trimetrical view illustrating the method of pre-forming a corner unit.

Figure 4 is a trimetrical view of the corner unit.

Figure 5 is a view similar to Figure 2 illustrating a modification.

Figure 6 is an enlarged and more detailed trimetrical fragmentary view of a corner unit.

Figure 7 is a plan of a templet or base for use in the production of a modified formation of corner unit of which a trimetrical view is shown in Figure 8. Figure 8 is a view of a corner unit.

Figure 9 is a view similar to Figure 8 illustrating a modification and Figure 10 is a trimetrical sectional view illustrating a modified method of laying a wall section to be incorporated in a corner unit.

Figure 11 is a trimetrical sectional view of a templet or base for use in the production of another modified formation of corner unit.

Like reference numerals indicate like parts throughout the drawings.

The templet shown in Figure 1 comprises a base 20 of rectangular outline having a series of aligned buttresses 21 at each end. At each side there is a wall 22 detachably supported in a groove of the base and at each end walls 23 are wedged between the buttresses 21 and the ends of the walls 22.

The area enclosed between the walls 22 and 23 is subdivided into spaces, each corresponding to a brick face which is destined to provide or to determine a surface of the corner unit, by means of ribs 24 projecting from the upper surface of the base 20. These ribs 24, which may be interrupted, locate the relative positions of bricks laid in the spaces between them causing bricks in adjacent courses to break joint with one another and they also determine the width of clearance between the bonding faces of the bricks.

The spaces delineated by the ribs 24 are preferably slightly greater in both dimensions of the plane from which they project than the face of an average sized brick and in use each brick is intended to be placed in a space and brought to bear against one longitudinal and one transverse rib, the two ribs thus used to gauge the position of each brick bearing the same relationship to the other two ribs bounding each of the spaces in which a brick is laid. In this manner parallel position and correct alignment of all the bricks may be ensured.

Stop blocks 25 fill the smaller spaces between the ribs 24 at one end of the templet or base and,

as shown, will thus be situated at one end of alternate courses defined by the ribs 24. A filler stop 26 fits into a corner at the opposite end of the templet or base and its exposed side is stepped and inclined to the line of the courses as shown in Figure 1.

In using the templet for pre-forming a wall section to be incorporated in a corner unit the bricks are laid as described above in the spaces between the locating ribs 24, re-inforcing rods 27 (indicated in chain lines in Figure 1) are threaded through registering holes 28 (Figure 6) in the bricks at any desired intervals and may engage any desired number of courses. One or both of the walls 22 may be slotted as shown at 29A to facilitate insertion of the re-inforcing rods 27.

Longitudinal re-inforcing rods 29 may be laid between courses, conveniently along grooves in the bricks as shown at 30 in Figure 6, these longitudinal reinforcing rods being bent at right angles to the templet or base 20 where they emerge from the bricks at the sides of the stop blocks.

Fluid bonding material such as cement, which is preferably mixed with sufficient water to be rather in the nature of a liquid than a paste is grouted on to the re-inforced assembly of bricks in the templet so as to fill the bonding spaces determined by the ribs 24 as well as the holes 28 and grooves 30 in some of which the re-inforcing rods 27 and 29 are disposed.

Surplus bonding material is removed before it has completely set by means of a scraper which may be supported on the walls 22, these walls being preferably of such height as to leave a layer of the bonding material covering the upper faces of the bricks in the templet.

The stop blocks 25 and the filler-stop 26 function primarily to confine this bonding material to the area occupied by the bricks laid between the ribs 24 and the faces of the stops against which bricks abut are of such material (preferably wood) or are so treated that the bonded brickwork unit will not be firmly attached thereto. A further function performed by the stop blocks and filler-stop is to delineate the area to be filled with bricks whilst the stop blocks 25 ensure the production of gaps 31 between the bricks at one end of alternate courses as clearly illustrated in Figure 2 which shows diagrammatically, omitting the re-inforcing rods 27 and 29, holes 28 and grooves 30, a wall section 32 pre-formed in the templet of Figure 1.

This wall section, thus pre-formed is supported on the end or side edge containing the gaps 31 on the templet illustrated in Figure 3. This templet is similar to the one shown in Figure 1, having the buttresses 21 at one end, the side walls 22, an end wall 23 wedged against the buttresses 21 and a filler-stop 26 in the corner between one of the side walls 22 and the end wall 23.

At the desired distance from the end wall 23, governed by the longest course in the wall section 32, a bracket or wall 33, which may have locating ribs similar to those of the templet of Figure 1, extends from the base 20 of the templet and is secured at that angle thereto which is desired in the brickwork corner unit by means of a buttress 34, both the bracket 33 and the buttress 34 preferably engaging grooves in the base 20. The pre-formed wall section 32 is clamped against the bracket 33, by any desired means such as the bands 35 tightened around the wall section 32 and bracket 33 by the wedges 36.

If desired adjustable bolts such as the one indicated at 33A may be fitted to the bracket 33 to

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provide contact points for the wall section 32 to bear against and to assist in trueing that section at the desired angle to the base 20.

The base 20 of the templet shown in Figure 3 between the bracket 32 and the end wall 23 is subdivided by locating ribs 24 similar to those shown in Figure 1 and when the section 32 is supported against the bracket 33 the bricks bounding the gaps 31 are in contact with a line of the transverse ribs 24. Bricks to provide a second wall section 37 of the corner unit are then laid on the templet between its locating ribs between the wall section 32 and the corner filler-stop 26. In doing this alternate bricks adjoining the wall section 32 are inserted in the gaps 31 of the wall section 32 and the bricks between them abut towards, but are spaced apart from, those of the wall section 32 which separate the gaps 31 by the transverse locating ribs.

As the wall section 37 is thus being laid it is re-inforced and after being laid it is bonded in a similar manner to that described with reference to the formation of the wall section 32, a batten or the like 38 preferably being laid at the base of the bracket 33 to help to confine the bonding material to the area covered by the bricks.

When the longitudinal re-inforcing rods 29 have been incorporated in the wall section 32 the grooves 30 of those bricks which bound or are inserted in the gaps 31 have transverse branches 30A to receive the bent portions of the rods 29 as clearly shown in Figure 6.

After the bonding material has set, the clamps 35, 36 are detached and the complete corner unit, shown diagrammatically in Figure 4, may then be removed, transported to the building site and erected to form part of a brickwork structure. Such erection is preferably effected as described in my co-pending application Serial No. 534,761 corner units being laid with their inclined stepped sides uppermost to be complementary to inverted wall section units having like stepped inclined ends.

If desired both wall sections and thus the complete corner unit may be pre-formed on the one templet, but it is generally preferred to use two such as are illustrated to avoid the necessity of changing the position of the corner filler stop 26 when laying the second wall section 37 in order that the brick faces laid on the templet shall be on the outer sides of both wall sections.

The gaps 31 in the wall section 32 are in the plane of that wall section. If desired they may be produced in the plane of the second wall section 37, as shown in Figure 5, by dispensing with the stop blocks 25 and laying the bricks 38 of Figure 5 on their ends in the spaces occupied by the stop blocks 25 in Figure 1.

As illustrated in Figures 7 and 8 the present invention may be applied to produce a double corner unit comprising a central wall section 39 with two other wall sections 40 and 41 united thereto and extending respectively from the two sides of the central wall section 39.

The central wall section 39 with the gaps at one end of alternate courses is double the thickness of a single brick and may be pre-formed in a templet of sufficient depth but otherwise conforming to that of Figure 1 by first laying the wall section 32 as previously described and then superimposing thereon a second layer, the bricks of the upper layer being separated from those of the lower layer by loose ribs or distance pieces to provide clearance for the bonding material, as described in my copending application Serial No. 534,761 filed May 9, 1944. After the re-inforced

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double wall section has been completed by the setting of the bonding material it is supported in the templet of Figure 7 on the bricks 42 which bound the gaps 31 and the two wall sections 40 and 41 are then laid, re-inforced and bonded on the templet, one on each side of the double wall section with alternate bricks of the two wall sections 40 and 41 adjoining the double wall section abutting towards one another in the gaps between the bricks 42 as clearly shown in Figure 7. Thus each of the wall sections 40 and 41 is laid, re-inforced and bonded to the central wall section 32 in the same manner as the wall section 37 of the corner unit illustrated in Figure 4. One or more of the longitudinal re-inforcing rods 29 may extend continuously in the two side wall sections 40 and 41 and others may extend from the central wall section 39 into one or the other of the two side wall sections.

In the double corner unit of Figure 8 all the bricks in the central wall section 39 are stretchers but if desired the double wall section may comprise both stretchers 43 and headers 44 as illustrated in the central wall section 45 of Figure 9. Such a double thickness wall section may be pre-formed in the templet diagrammatically illustrated in Figure 10, the locating ribs 46 of which are disposed to indicate how the bricks are to be laid, the stretchers 43 of the second layer being separated from those of the lower layer by loose ribs or distance pieces 47 to provide clearance for the bonding material. The bricks would be suitably grooved and perforated for reception of the desired re-inforcing rods.

In order to ensure to production of the desired gaps between the bricks at one end of alternate courses of the double wall section the templet of Figure 10 is provided with stop blocks 48 functioning similarly to the stop blocks 25 of Figure 1 but of double the depth.

If desired, stop blocks such as 25, of a single brick thickness, may be used and in this case headers of the second layer may be laid on the stop blocks thus producing one series of the gaps 31 in the plane of the first layer and a second series of the gaps in the plane of one of the wall sections 40 or 41.

After the double wall section has been pre-formed in the templet of Figure 10 the corner unit may be completed in the templet of Figure 7 as described with reference to the corner unit of Figure 8.

The present invention may be applied to produce a pre-formed corner unit comprising four wall sections and four interior corners by continuing a central wall section such as 45 on the other side of the two flanking wall sections 40 and 41.

For this purpose additional gaps are preferably produced at the end of the courses when pre-forming the central wall section 45 and these gaps or some of those provided for the wall sections 40 and 41 are left void, conveniently by the aid of appropriately disposed stop blocks such as 25 or 48 when pre-forming a double corner unit such as illustrated in Figure 9. The bonded and re-inforced double corner unit is then supported on a bench-like templet, such as is illustrated in Figure 11, having a recess or pocket at 49 for the reception of the wall section 41. A continuation of the central wall section 45 is laid, re-inforced and bonded as indicated on the right hand side of Figure 11 to pre-form a fourth wall section 50. In thus laying the wall section 50 the gaps in the first laid section 45 which had been left void in

pre-forming the double corner unit are filled with bricks of the wall section 50 whereby the four wall sections may be interlocked. A brick of the fourth wall section 50 has been omitted to show one of the void gaps 31 in the wall section 45 and to illustrate how the interlocking of the wall section 50 with the remainder of the corner unit is effected. Likewise the filler-stop 26 has been omitted to show the locating ribs 46 for the wall section 50.

Whether the corner unit comprises the two wall sections 32 and 37 the three wall sections 40, 41 and 39 or 43, 44 and 45 or the four wall sections 40, 41, 45 and 50 one of the transverse re-inforcing rods preferably engages holes in bricks comprised in both wall sections of each corner as shown for example in Figure 6 where the re-inforcing rod 27A is common to bricks in both the wall section 32 and the wall section 37.

What I claim is:

1. The method of building a masonry corner structure, which comprises the steps of laying bricks on a horizontal guide surface to form a wall section, leaving gaps between the bricks at the ends of alternate courses at one edge of said wall section, bonding the bricks of said wall section, up-ending said section so that it rests upon a horizontal guide surface on the edge having the gaps therein, and laying and bonding bricks on said surface to form a second wall section the end bricks of certain alternate courses of said second section fitting into the gaps of said first section and bonded thereto.

2. The method of building a masonry corner structure, which comprises the steps of laying bricks on a horizontal guide surface to form a wall section, leaving gaps between the bricks at the ends of alternate courses at one edge of said wall section, reinforcing and bonding the bricks of said wall section, allowing the bond to set, up-ending said section so that it rests upon a horizontal guide surface on the edge having the gaps therein, and laying, reinforcing, and bonding bricks on said surface to form a second wall section, the end bricks of certain alternate courses of said second section fitting into the gaps of said first section and bonded thereto.

3. The method of building a masonry corner structure, which comprises the steps of laying bricks on a horizontal guide surface to form a wall section, leaving gaps between the bricks at the ends of alternate courses at one edge of said wall section, embedding angular reinforcing elements in said section with portions thereof extending at right angles thereto bonding the bricks of said wall section, up-ending said section so that it rests upon a horizontal guide surface on the edge having the gaps therein, and laying and bonding bricks on said surface to form a second wall section, the end bricks of certain alternate courses of said second section fitting into the gaps of said first section and bonded thereto, said second section being laid so as to embed the projecting portions of said reinforcing elements.

4. The method of building a masonry corner structure, which comprises the steps of laying bricks on a horizontal guide surface to form a wall section, using progressively fewer bricks in each course to provide a stepped edge, leaving gaps between the bricks at the ends of alternate courses at one edge of said wall section, bonding the bricks of said wall section, up-ending said section so that it rests upon a horizontal guide surface on the edge having the gaps therein, and laying and bonding bricks on said surface to form a sec-

ond wall section with a stepped edge, the end bricks of certain alternate courses of said second section fitting into the gaps of said first section and bonded thereto.

5. The method of building a masonry double corner structure, which comprises the steps of laying bricks on a horizontal guide surface to form a wall section, leaving gaps between the end bricks of alternate courses at one end of said section, bonding the bricks of the wall section, up-ending said section so that it rests upon a horizontal guide surface on the edge having the gaps therein, and then laying bricks on said surface to form two co-planar wall sections, fitting end bricks of certain alternate courses of said sections into the gaps of the first section, and bonding the bricks and sections together.

6. The method of building a masonry double corner structure, which comprises the steps of laying bricks on a horizontal guide surface to form a wall section of double the width of a single brick, leaving gaps between the end bricks of alternate courses at one end of said section, bonding the bricks of the wall section, up-ending said section so that it rests upon a horizontal guide surface on the edge having the gaps therein, and then laying bricks on said surface to form two co-planar wall sections of the width of a single brick, fitting end bricks of certain alternate courses of said sections into the gaps of the first section, and bonding the bricks and sections together.

7. The method of building a masonry structure comprising a preformed corner unit consisting of four wall sections abutting to provide four interior corners, which comprises the steps of laying and bonding bricks on a substantially horizontal guide surface omitting certain end bricks of certain courses at the edge of said section, up-ending said section so that it rests upon a substantially horizontal guide surface on the edge having the gaps therein, laying two co-planar flanking wall sections on said surface, fitting end bricks of certain courses of said two flanking sections into certain of the gaps of said first named section, bonding the bricks and sections together, again resting said first named section on a substantially horizontal surface so that the two flanking sections extend respectively upwardly and downwardly therefrom, providing another substantially horizontal surface co-planar with said first named surface on the opposite side of said flanking sections from said first named section, laying bricks on said final surface to form the fourth wall section, fitting certain end bricks of said final section into gaps left in one of the other sections.

8. A templet for use in preparing a brickwork corner unit comprising four wall sections, said templet comprising a horizontal table having an intermediate vertical slot therein, the surface of the table upon one side of the slot adapted to support a previously laid up wall section, the slot adapted to contain a downwardly projecting rectilinear wall section connected to said first named wall section, and the surface upon the opposite side of said slot being provided with guide projections for locating the respective positions of bricks being laid up into still another wall section being interlocked with the first two sections.

9. A templet for use in preparing a brickwork corner unit, said templet comprising a horizontal table, a bracket projecting from the plane of the table, and means to clamp a previously laid up wall section against one face of the

bracket, the surface of the table next that face of the bracket being provided with guide projections for locating the respective positions of bricks being laid up into a further wall section being interlocked with the first wall sections.

10. A templet for use in preparing a brickwork corner unit, said templet comprising a horizontal table, a bracket projecting from the plane of the table, adjustable bolts in the bracket, and means comprising bands surrounding the bracket and adapted for clamping a previously laid up wall section against contact points provided by the adjustable bolts, the surface of the table next that face of the bracket being provided with guide projections for locating the respective positions of bricks being laid up into a fur-

ther wall section being interlocked with the first wall sections.

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