March 30, 1948. E. G. MALTHOUSE 2,438,613

APPARATUS FOR USE IN ERECTING MASONRY STRUCTURES

Original Filed May 9, 1944 3 Sheets-Sheet 1

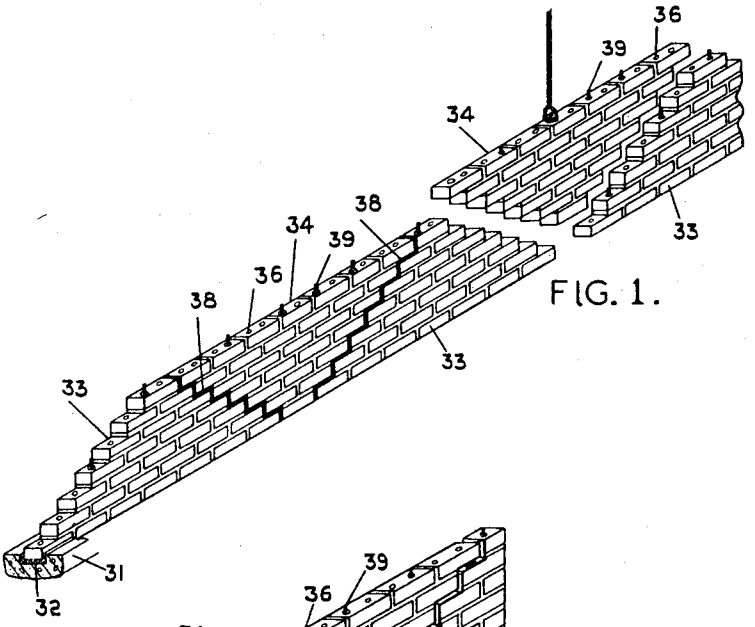


FIG. 1.

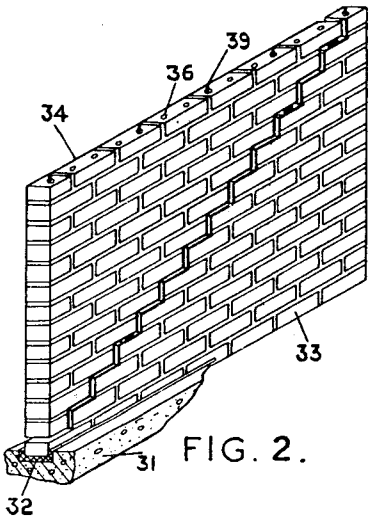


FIG. 2.

INVENTOR
Ernest G. Malthouse

By Watson, Cole, Grindle + Watson

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Original Filed May 9, 1944 3 Sheets-Sheet 2

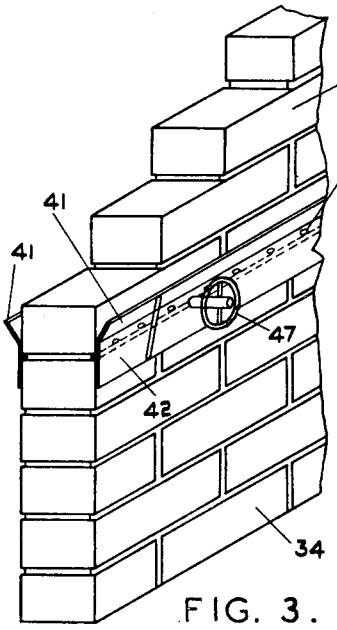


FIG. 3.

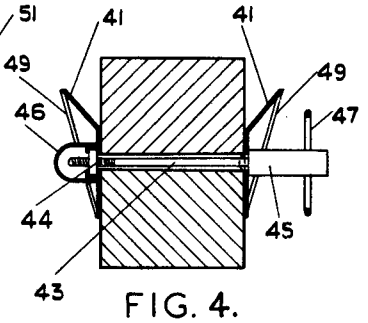


FIG. 4.

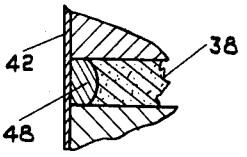


FIG. 5.

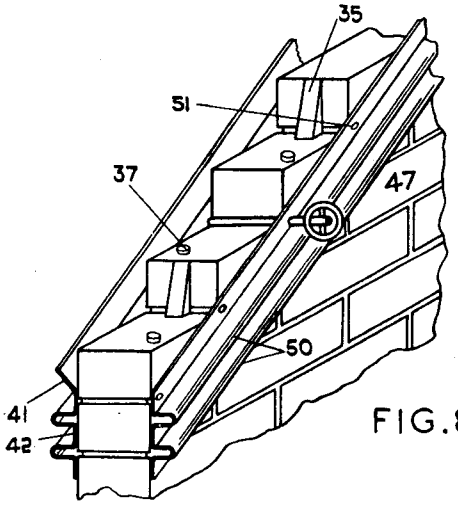


FIG. 8.

INVENTOR
Ernest G. Malthouse
By Watson, Cole, Grindle & Watson

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Original Filed May 9, 1944 3 Sheets-Sheet 3

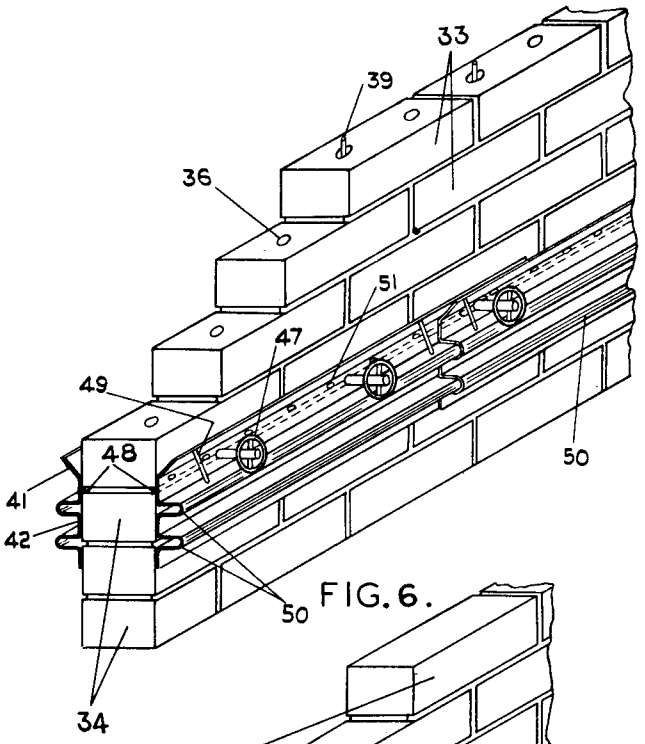


FIG. 6.

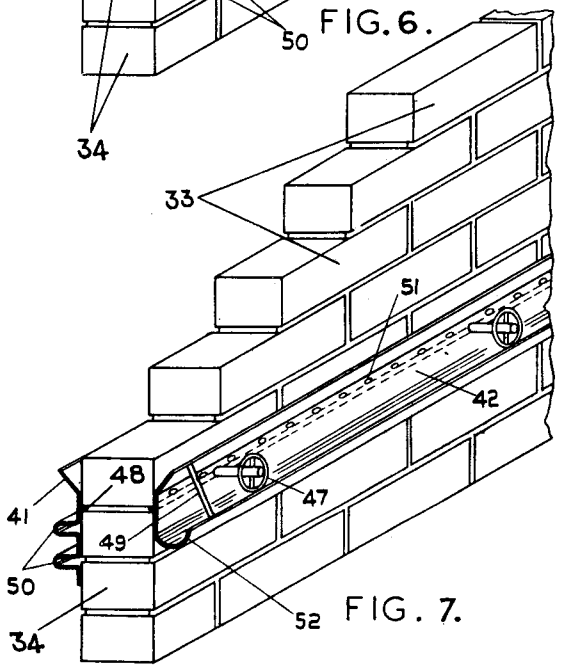


FIG. 7.

INVENTOR
Ernest G. Malthouse

By Watson, Cole, Grindle & Watson

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UNITED STATES PATENT OFFICE

2,438,613

APPARATUS FOR USE IN ERECTING MASONRY STRUCTURES

Ernest G. Malthouse, Sheffield, England

Original application May 9, 1944, Serial No. 534,761. Divided and this application March 20, 1945, Serial No. 583,738. In Great Britain April 17, 1943

7 Claims. (Cl. 33—85)

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This invention relates to the erection of building structures by the use of units of large size and weight in comparison with single bricks. It is particularly, but not exclusively, applicable for use in cases where the building units have at least one end stepped and inclined to the base and in cases where the building units are preformed by laying, reinforcing and bonding bricks on a templet or base which has ribs or other projections locating the relative positions of the bricks and determining the width of clearances between their bonding faces.

The object of the invention is to provide improved apparatus for guiding a building unit to its base as it is being lowered vertically to its appointed position in the structure and for ensuring its correct alignment and vertical position in the structure.

Other objects are to provide means for enabling the apparatus to perform other useful functions.

Additional objects will become apparent upon a perusal of the following specification.

In the accompanying drawings:

Figure 1 is a perspective view illustrating the erection of a wall by shaped building units lowered vertically into position.

Figure 2 is a view similar to Figure 1 showing a different shape of unit.

Figure 3 is a partial perspective view illustrating the use of apparatus according to the present invention.

Figure 4 is a vertical section illustrating on a larger scale the apparatus shown in Figure 3.

Figure 5 is a vertical section on a still larger scale of part of the horizontal joints between two units.

Figures 6 and 7 are views similar to Figure 3 illustrating modifications and

Figure 8 is a perspective view illustrating the application of the invention to a joint between stepped inclined ends of units.

Like reference numerals indicate like parts throughout the drawings.

With reference first to Figures 1 and 2 which show the use of triangular building units having at least one end stepped and inclined to the base, a concrete foundation 31 is laid and moulded with grooves 32 of a width which is governed by the thickness of the wall to be built and cement is applied in the grooves 32.

As shown in Figure 1 brickwork units 33, preformed, reinforced and bonded in a templet are lowered vertically onto their bases in a groove 32 by the aid of any convenient hoisting tackle,

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adjacent units being separated by a distance equal to the length of their apices, the stepped inclined ends of the units 33 are prepared with cement as shown at 38 and like units 34 in an inverted position are then lowered into the spaces between the units 33 first erected as shown at the right hand end of Figure 1.

The preformed brickwork units 33 and 34 are conveniently lifted and lowered by the aid of transverse reinforcing rods, the ends of which or of some of them may protrude through registering holes 36 in the bricks at the exposed bonding faces of the bricks as shown at 39. Some of these protruding ends may be screwed for attachment of bars, eyes or the like to be engaged by the hoisting tackle whilst others may form dowels to engage holes in other units.

Figure 2 shows the units 33 and 34 shaped to provide vertical ends of a wall, one only of each of these units being illustrated. For a longer wall these two units would be separated the requisite distance, the space between them being occupied by a row of the units shaped as shown in Figure 1 but of a size which gives the same number of courses as the units of Figure 2.

Having erected a row of the units 33 and 34 a second row of the brickwork units is erected in two stages, the units 33 being lowered on to distance pieces (not shown) with the protruding ends 39 of the transverse reinforcing rods in one row engaging some of the holes 36 in the other row.

In order to facilitate erection of the second and subsequent rows of the building units inclined guides 41 leading to the uppermost horizontal bonding face of the previously erected section of the structure are temporarily clamped to the top of that section. As shown in Figures 3, 4 and 5 these guides 41 have plate-like extensions 42 embracing the uppermost course of bricks in the unit 34 to which they are clamped by means of bolts 43 fitted with nuts 44 and having heads 45. The nuts 44 carry caps 46 to protect the bolt ends whilst the heads 45 are fitted with handles 47 to facilitate application of the clamping pressure. The plate-like extensions 42 of the guides carry beads 48 (Figure 5) determining by contact with the uppermost surface of the units 34 both the correct positions of the guides 41 and the depth of pointing.

When thus clamped in position the guide plates 41, 42 form a channel at the top of the wall section and bonding material may be retained in this channel by the aid of end barriers (not shown) of any convenient nature.

The plate-like extensions **42** of the guides are intended to project above the bonding face of the units **34** already erected and themselves to form vertical guides ensuring correct alignment and vertical position of the units comprised in the second and subsequent rows.

After the units in the upper row have been lowered into position and the bonding material has set the guide plates **41**, **42**, may be detached by unscrewing the bolts, **43**, **45**, **47** and withdrawing them, the holes thus left in the joint being subsequently plugged. Wire rods or the like **49** are shown extending from the guides **41** to their extensions **42**, to which they may be secured by welding, to stiffen the guides and to be engaged by hooks (not shown) to facilitate their withdrawal from the top of the row of units which have last been erected, especially in the case of cavity walls.

In many cases it will be desirable to provide and to affix the inclined guides **41** in a number of lengths or sections for which purpose their plate-like extensions **42** may be of a telescopic nature. As shown in Figure 6 the extensions **42** are corrugated at **50** in the direction of the courses. Adjacent lengths or sections overlap and are slidable in relation to one another, the bolts **43** engaging elongated holes or slots in one or both of the overlapping portions.

The guide extensions **42** are shown perforated with a line of holes **51** through which surplus bonding material may escape when the upper units are lowered into position. As shown in Figure 7 the lower regions of the extensions **42** are shaped at **52** to form gutters to receive surplus bonding material admitted thereto through the perforations **51**. These gutters **52** in conjunction with the guides proper **41** also function to impart telescopic properties to adjacent overlapping sections of guides.

If desired the inclined guides **41** may also be applied to the stepped ends of the units **33** in the first stage of each erection step to assist in guiding the inverted unit as it is lowered into position, as shown in Figure 8, temporary wedges **35** and distance pieces **37** being preferably also used.

What I claim is:

1. Apparatus for use in erecting masonry wall structures and the like, comprising, in combination, a pair of guide members adapted to be applied to opposite sides of the upper edge of a partially completed structure; each of said members comprising a substantially vertical plate-like portion in contact with one side of said structure, and an upper portion bent outwardly from the structure to stand at an acute angle thereto; and means for detachably connecting said guide members to said structure.

2. The apparatus set forth in claim 1 in which the plate-like vertical portions of the guide members extend upwardly somewhat above the top edge of the partially erected structure and are provided with a series of perforations along the upwardly extended parts of said plate-like portions, and in which gutters are provided on said portions below said perforations.

3. Apparatus for use in erecting masonry wall structures and the like, comprising, in combination, a pair of guide members adapted to be applied to opposite sides of the upper edge of a partially completed structure; each of said members comprising a substantially vertical plate-like portion in contact with one side of said structure and extending slightly above the level of the top edge of said structure, and an upper portion bent outwardly from the structure to stand at an acute angle thereto; and means for detachably connecting said guide members to said structure.

4. Apparatus for use in erecting masonry wall structures and the like, comprising, in combination, a pair of guide members adapted to be applied to opposite sides of the upper edge of a partially completed structure; each of said members comprising a substantially vertical plate-like portion, and an upper portion bent outwardly from the structure to stand at an acute angle thereto; longitudinal beads projecting inwardly from each plate-like portion; and means for detachably connecting said guide members to said structure one on each side of a previously erected portion of the structure with the beads in contact with the top surface and the plate-like portions in contact with the side faces thereof.

5. Apparatus for use in erecting masonry wall structures and the like, comprising, in combination, a pair of guide members adapted to be applied to opposite sides of the upper edge of a partially completed structure; each of said members comprising a substantially vertical plate-like portion adapted to contact with one side of said structure, and an upper portion bent outwardly from the structure to stand at an acute angle thereto; rod-like bracing elements extending from said outwardly bent upper portions to the plate-like lower portions; and means for detachably connecting said guide members to said structure.

6. Apparatus according to claim 1 in which said guide members are provided in a number of substantially aligned sections, longitudinal corrugations being provided in the plate-like portions thereof and having a telescoping engagement with the corresponding portions of adjacent lengths.

7. Apparatus for use in erecting masonry wall structures and the like, comprising, in combination, a pair of guide members adapted to be applied to opposite sides of the upper edge of a partially completed structure; each of said members comprising a generally vertically disposed lower portion having at least one vertical plate-like part adapted to contact with one face of said structure, and an upper plate-like portion extending diagonally upwardly and outwardly from said face to extend at an acute angle thereto; rod-like bracing struts extending from said lower portions to said upper angled portions; and means adapted to extend across said partially completed structure for detachably connecting the guide members on the respective sides thereof and securing them firmly to the side face of said structure.

ERNEST G. MALTHOUSE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,414,755	Smith	May 2, 1922
1,855,394	Hill	Apr. 26, 1932
2,076,534	Galbraith	Apr. 13, 1937