Nov. 16, 1965 L. NAAR 3,217,457

TIES FOR USE IN WALLS AND OTHER STRUCTURES

Filed June 28, 1962

Fig.1.

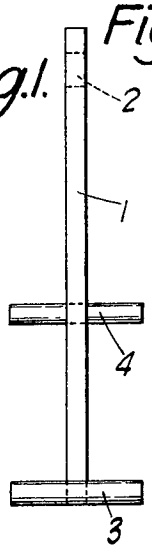


Fig.2.

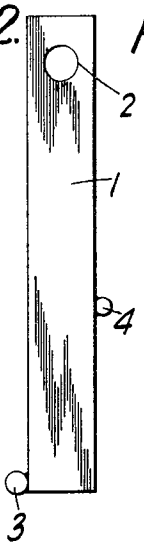


Fig.4.

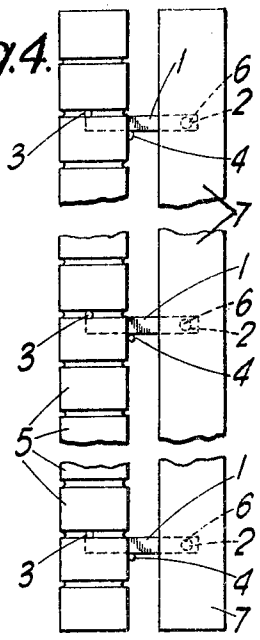


Fig.3.

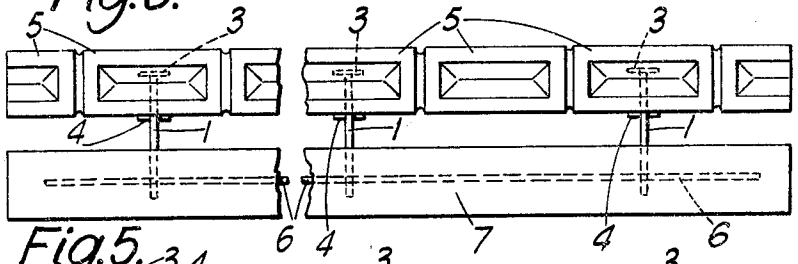
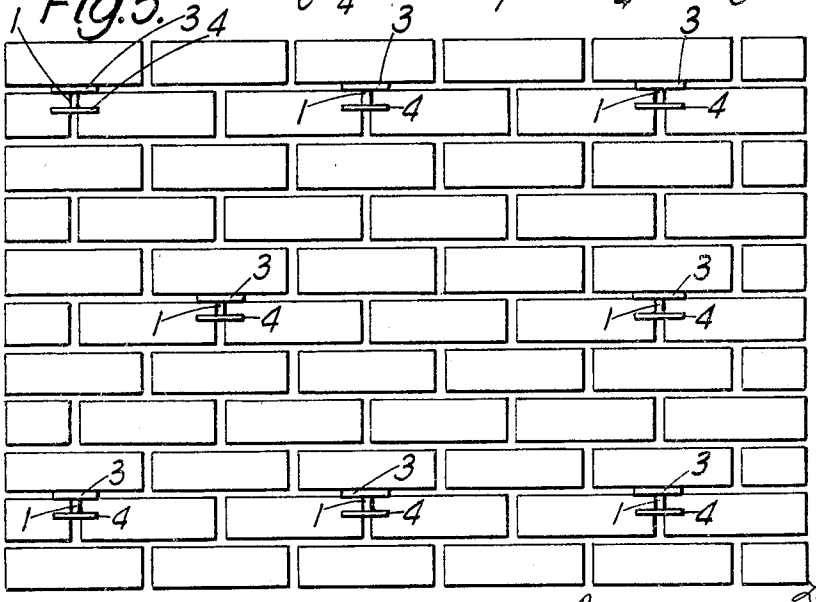


Fig.5.



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TIES FOR USE IN WALLS AND OTHER STRUCTURES

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7 Claims. (Cl. 52—428)

This invention relates to ties for use in walls and other structures and has a particularly useful, but not exclusive, application in prefabricated wall panels which are formed on generally horizontal supports.

According to this invention there is provided a tie comprising a bar having a hole extending transversely through one end of thereof, and a pair of rods extending transversely of the bar and fixed thereto, which rods are spaced from each other lengthwise of the bar and are offset from each other transversely of the bar, one of the rods being fixed to a length-wise extending face of the bar adjacent its end opposite the said one end and the other rod being disposed intermediate the said one rod and said one end. Preferably each of the rods projects on both sides of the bar.

The invention also provides a method of constructing a wall comprising the steps of placing bricks in layer formation on a generally horizontal support, then inserting ties as set forth above in selected positions in the formation so that the bar of the tie is disposed between the end faces of two adjacent bricks in a layer, the said one rod being disposed between that layer and a next adjacent layer and the said other rod resting against the upper face of at least one of the said two bricks, and inserting mortar or the like between the bricks in the formation and round the parts of the ties between the bricks.

According to a preferred feature of the invention the bar is rectangular so as to have two narrow lengthwise extending faces and two broad lengthwise extending faces and the said rods are fixed to the two narrow faces respectively. The rods may be of circular cross-section and are conveniently welded to the bar.

The invention also provides a structure incorporating one of more wall portions incorporating ties as set forth above and/or constructed by the method also set forth above.

One arrangement embodying the invention will now be described by way of example with reference to the accompanying drawings in which,

FIGURES 1 and 2 respectively show a plan and end elevation of the tie, and

FIGURES 3 and 4 respectively show a plan and end elevation of a completed and erected wall panel incorporating ties as shown in FIGURES 1 and 2, and

FIGURE 5 shows the disposition of the bricks in layer formation with the ties in position and prior to filling with mortar.

Referring to FIGURES 1 and 2 of the drawings the tie comprises a metal bar **1** of rectangular cross-section formed at one end with a hole **2**. Adjacent its opposite end the bar has a transverse rod **3** welded to one of its narrower faces, and intermediate its ends, the bar has a second transverse rod **4** welded to the other of its narrower faces. The rods **3**, **4** are thus spaced from each other along the bar, and are spaced from each other transversely by the depth of the bar. In the arrangement shown, the rods **3**, **4** are of the circular cross-section and the rod **4** has a smaller diameter than that of the rod **3**.

In use of the ties for making prefabricated wall panels, bricks **5** are placed in the usual layer formation on a horizontally disposed grid (not shown) which has upwardly-projecting ribs to locate the bricks correctly in the manner indicated in FIGURE 5. The ties are then inserted so that, as shown in FIGURES 3 to 5, the bar **1** of each tie lies between the end faces of two bricks in a layer, the rod **3** of the tie lies in the space between the two bricks and the bricks in the next layer, and the rod **4** rests against side faces of the two bricks. The ties are disposed in rows so that reinforcing rods **6** can be passed through the aligned holes **2** in the bars. Mortar is then inserted between the bricks. After this, shuttering is disposed round the ends of the bars **1**, and the reinforcing/keying rods **6** are inserted through the holes **2** as mentioned above. A slab of concrete **7**, is then cast in the shuttering round the rods **6** and the ends of the bars. When the mortar and concrete have set the shuttering can be removed and the structural panel can be removed from the grid. After a suitable period, to allow shrinkage and final curing of the concrete, the panel is ready for use.

If desired, the reinforcing rods may be omitted in which case the concrete will flow into holes **2** to form a key.

I claim:

1. A wall tie for use in the fabrication of wall structures comprising

(a) an elongated body part of substantially constant rectagular section over its length and having two broader and two narrower lengthwise extending sides.

(b) an aperture passing through the body part near one end thereof,

(c) a rod secured to one of the said narrower sides of the body part at the other end thereof and extending transversely to the length of the body part, and

(d) a locating rod secured to the other of the said narrower sides of the body part intermediate of and extending transversely to the length of the body part.

2. A tie as claimed in claim **1**, wherein each of the rods projects on both sides of the bars.

3. A tie as claimed in claim **1**, wherein the said rods are welded to the body part.

4. A tie as claimed in claim **1**, wherein the rods are of circular cross-section.

5. A wall structure comprising

(a) a concrete wall panel,

(b) a brick wall panel spaced from the concrete wall panel and being comprised by a plurality of spaced rectangular cuboidal bricks arranged in superimposed rows and by mortar in the spaces between adjacent bricks, which mortar bonds the bricks together,

(c) a plurality of wall ties each comprising a body part of substantially constant rectangular section over its length and having two broader and two narrower lengthwise extending sides, each body part extending between and terminating in the wall panels so that one end lies in the concrete wall panel and the other end lies in the brick wall panel, the said other end being located between a pair of adjacent bricks of a row with the narrower sides extending in the direction of the row, each wall tie further comprising an opening in the said one end of the body part, a rod secured to one of the narrower sides at the said other end of the body part and lying between adjacent rows of bricks, and a locating rod secured to the other of the narrower sides and bearing on the said pair of adjacent bricks, and

(d) an elongated member extending through the concrete wall panel and passing through the said openings in the said ends of the body parts.

6. A wall structure comprising

(a) a concrete wall panel,

(b) a brick wall panel spaced from the concrete wall panel and being comprised by a plurality of spaced rectangular cuboidal bricks arranged in superimposed rows and by mortar in the spaces between adjacent bricks, which mortar bonds the bricks together, and

(c) a plurality of wall ties each comprising a body part of substantially constant rectangular section over its length and having two broader and two narrower lengthwise extending sides, each body part extending between and terminating in the wall panels so that one end lies in the concrete wall panel and the other end lies in the brick wall panel, the said other end being located between a pair of adjacent bricks of a row with the narrower sides extending in the direction of the row, each wall tie further comprising keying means at the said one end of the body part, a rod secured to one of the narrower sides at the said other end of the body part and lying between adjacent rows of bricks, and a locating rod secured to the other of the narrower sides and bearing on the said pair of adjacent bricks.

7. A wall structure comprising

(a) a concrete wall panel,

(b) a brick wall panel spaced from the concrete wall panel and being comprised by a plurality of spaced rectangular cuboidal bricks arranged in superimposed rows and by mortar in the spaces between adjacent bricks, which mortar bonds the bricks together, and

(c) a plurality of wall ties each comprising a body part of substantially constant rectangular section over its length and having two broader and two narrower lengthwise extending sides, each body part extending between and terminating in the wall panels so that one end lies in the concrete wall panel and the other end lies in the brick wall panel, the said other end being located between a pair of adjacent bricks of a row with the narrower sides extending in the direction of the row, each wall tie further comprising keying means at the said one end of the body part, a rod secured to one of the narrower sides at the said other end of the body part and lying between adjacent rows of bricks, and locating means secured to the body part, the said locating means lying in a different plane to the rod and bearing on the said pair of adjacent bricks.

References Cited by the Examiner

UNITED STATES PATENTS

99,035	1/1870	Tutte	50—423
364,241	6/1887	Frost	50—481 X
693,213	2/1902	Bajohr	50—22
939,726	11/1909	Magdiel	50—332
1,052,246	2/1913	Hammons	50—481
1,556,066	10/1925	Bell	50—481 X
1,764,729	6/1930	Koch	50—481 X
1,809,504	6/1931	Carvel	18—61
1,832,231	11/1931	Menninger	50—481 X
1,914,770	6/1933	Duncan	50—360
2,015,951	10/1935	McAtee	50—479 X
2,017,587	10/1935	Dennis	18—61
2,034,766	3/1936	Navarre	50—332
2,124,799	7/1938	Specht	50—479 X
2,301,178	11/1942	Heltness	50—481 X
2,467,115	4/1949	Duggan	50—481 X
2,505,676	4/1950	Krueger	50—332

FOREIGN PATENTS

103,781	4/1938	Australia.
178,908	12/1906	Germany.
642,289	8/1950	Great Britain.

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