Dec. 20, 1966 W. BRYNJOLFSSON ETAL 3,292,336

REVERSIBLE WALL TIE

Filed Oct. 17, 1963

Fig 1

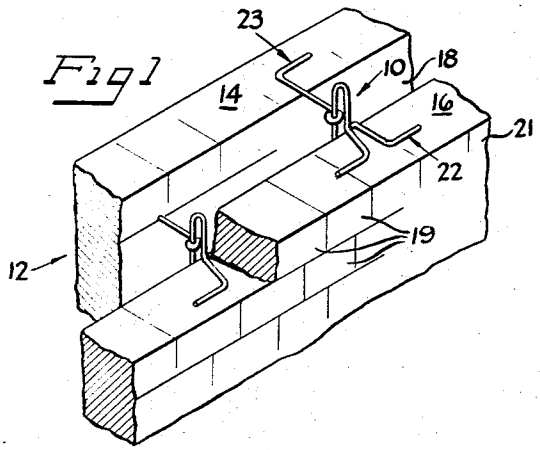


Fig 5

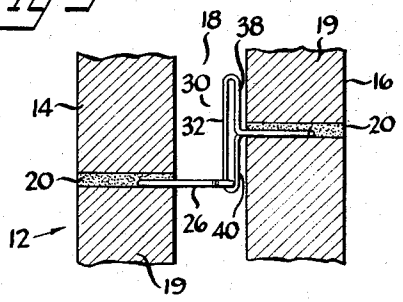


Fig 6

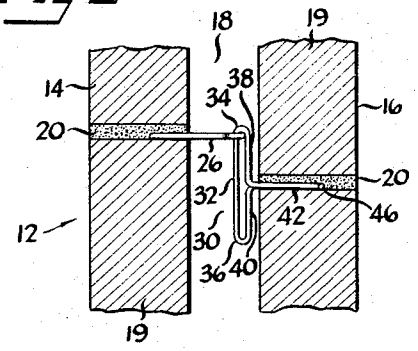


Fig 2

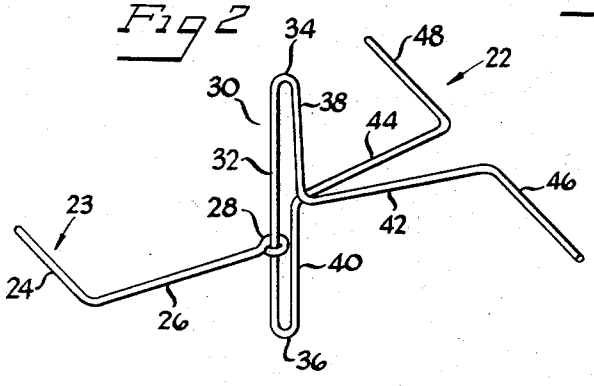


Fig 3

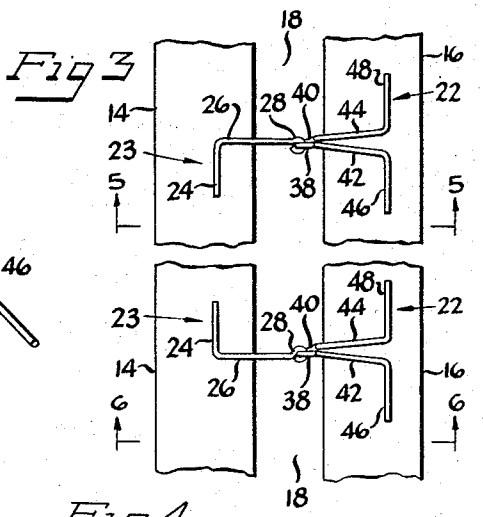


Fig 4

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REVERSIBLE WALL TIE

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This application relates to masonry wall construction and more particularly to a means for tying two walls of premolded elements together to form a single cavity wall unit.

In conventional cavity wall construction wherein two spaced generally wythes formed of premolded elements suc has concrete block or the like are held together by cementing means such as mortar or the like, wall tying means are generally used to tie the two wythes together as a unit. Generally the wall tying means includes two members positioned in the cementing material between the horizontal courses of each wythe and adapted for selective securement. Typically these wall tying means are adapted for mutual securement even though the plane of the cementing material of the respective wythes in which each member is lodged is above or below that of the mating member. Generally one of the wall tying members is embedded in the first wythe and when the second wythe is being constructed, the second member is thence secured to the first tying member in an appropriate manner depending upon whether the second member will be positioned in a plane above or below that of the first member. However, since two separate members are used the possibility of loss of the second member is ever present. Also, after the first member has been appropriately embedded in a mortar course the second mating member must be carried or stored somewhere else which may prove an inconvenience to the worker.

It is further typical of these wall tying means to be provided with some sort of a notch or recess in the horizontal plane of the one of the elements of the members to serve as a drip notch for collecting moisture which may collect in the cavity between the wythes. Typically such a notch is formed in the male member but since it cannot be predetermined whether the male member will be positioned at a lower level than the female member with its male element projecting upward or vice versa, then such a notch must be formed twice so as to compensate for the possible reverse positions of the male member. This double formation of such a notch necessarily involves an added step and added expense in the production of wall ties.

It is therefore a primary object of this invention to provide a new and improved wall tie means.

It is another object of this invention to provide a new and improved wall tie means which is free from the objections mentioned above.

It is still another object of this invention to provide a new and improved wall tie means wherein the male ends and female members are permanently secured prior to emplacement in a mortar course.

It is yet another object of this invention to provide a new and improved wall tie wherein the male and female members are permanently secured prior to emplacement in a mortar course and the nonemplaced member either above or therebelow for emplacement in a horizontally extending mortar course in a mating wythe of a cavity wall.

It is yet another object of this invention to provide a new and improved wall tie wherein the male and female members are secured together prior to the emplacement of either of the members in the mortar course of a concrete block wall and wherein the male member is adapted

to provide a drip notch means as an integral part of the male element thereof.

Other objects, features and advantages of the present invention will be apparent from the following description of the preferred embodiment illustrated in the accompanying drawings, in which:

FIGURE 1 is a perspective view of a cavity wall showing the use of the wall tie embodying this invention;

FIGURE 2 is an enlarged perspective view of the wall tie of this invention;

FIGURE 3 is a fragmentary top plan view of a portion of a cavity wall showing the position of the wall tie of this invention therein;

FIGURE 4 is another fragmentary top plan view similar to FIGURE 3 showing the wall tie therein with the male and female members turned about from the position shown in FIGURE 3;

FIGURE 5 is a section view taken along the line 5—5 of FIGURE 3 wherein the female member is emplaced in a mortar course slightly below the plane of the mortar course in which the male member is emplaced; and

FIGURE 6 is a section view taken along the line 6—6 of FIGURE 4 wherein the male member and female member are turned about from their position shown in FIGURES 3 and 5 and also the female member is positioned in the mortar course in a plane above the mortar course in which the male member is emplaced.

In FIGURE 1, the wall tie **10** of this invention is shown in use in a cavity-type wall **12** consisting of a pair of wythes **14** and **16** having a space or cavity **18** therebetween. The wythes **14** and **16** are made of conventional premolded material **19** such as concrete blocks or the like and are secured together by suitable bonding or cementing means **20** such as mortar or the like. The blocks are built in horizontal layers, or courses, **21** wherein the individual blocks **19** are vertically misaligned relative to the next horizontal layer thereabove or therebelow and in vertical alignment with the individual blocks of the layers of the second layer above or below in typical block or brick wall construction fashion.

The wall tie **10** comprises a male member **22** and a female member **23** both made of relatively heavy wire stock metal. The female member is substantially L-shaped in plan having a base **24** and a transversely extending arm **26** which is bent upon itself at the free end thereof to form an eye or female element **28**. The female element is adapted to be emplaced in the mortar course of a concrete block wall so that the base thereof is substantially parallel to the mortar course and the arm extends generally perpendicularly outward therefrom to position the eye **28** in the space **18** between the wythes with the opening thereof in a generally vertical plane relative to the longitudinal extent of the wythe.

The male member is bent upon itself to form an elongate loop **30** having on the free side thereof a finger or male element **32** sharply turned at either end **34** or **36** to form the opposite generally parallel half side members **38** and **40** which substantially close the loop. The side members are slightly misaligned in a vertical plane and at their point of lateral juxtaposition where they close the loop they are bent outwardly substantially transverse to the plane of the loop. This outward bend of each of the side members forms the two substantially coextensive arms **42** and **44** which are sharply bent away from each other in a direction generally transverse thereto to form the substantially colinear oppositely extending base members **46** and **48**, respectively. The base members also occupy the same plane as the arm members and are also in a plane transverse to that of the loop. The female member is secured to the male member with the finger of the latter extending through the eye of the former.

In use the wall tie may be positioned with either one of the members, preferably the male member, first emplaced in the mortar course of one of the wythes **14** or **16**. Since the members are secured together as a unit by means of a finger inserted through the eye of the female member, they are movable relative to each other. Thus if the male member is first emplaced in the cementing material of a wythe with the base members and arms thereof in a plane substantially horizontal to that of the cementing material the loop thereof may extend into the space between the wythes so that the length of the loop, and therefore the finger, is substantially parallel to the vertical dimension of the wall. This will permit the freely hanging female member to be positioned in selective horizontal planes above or below that of the male member depending upon the position of the mortar course of the companion wythe into which the female member will be placed. During construction of the wall, once the male member is emplaced in the mortar of one of the wythes, there is no need to carry around or store the mating female member. Also, as evidenced by FIGURES 5 and 7 there is no "top" or "bottom" end of the male member since it may be turned about in its position so that either of the sharply turned ends **34** and **36** serve as a drip notch for collecting moisture which may seep in or collect in the space **18**.

This invention provides a wall tie wherein the male and female members are presecured as a unit prior to emplacement in the cementing material of a concrete block wall. One of the members may be emplaced in the mortar course of a wythe and the other permitted to hang freely therefrom until the companion mortar course is completed in the related wythe of a cavity wall. Furthermore, with the wall tie of this invention, regardless of the positioning of the male member, there is an integral drip notch formed therewith.

While we have shown and described certain embodiments of our invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of our invention as set out in the appended claims.

We claim:

1. A reversible wall tie for cosecuring spaced wythes of preformed elements secured together by cementing means, comprising: a first member having a base piece and an outwardly extending arm; a generally elongate loop at the end of said arm, said loop formed in a plane generally transverse to the plane of said base piece and arm so that said loop is adapted to be positioned generally upright in the space between said wythes when the base piece of said first member is positioned in said cementing means; a second member having a base piece and an outwardly extending arm with the free end of said arm bent upon itself to form an opening at the end thereof, a portion of the loop of said first member extending through the opening of said second member so that upon securing the second member in the cementing means the wythes are held together as a unit by the wall tie.

2. A reversible wall tie for cosecuring spaced wythes of preformed elements secured together by cementing means, comprising: a male member consisting of a piece of metal bent upon itself to form an elongate loop and a base piece extending from said loop, said loop twisted to occupy a plane generally transverse to the plane of said base piece so that the opening in said loop is positioned generally parallel to said spaced wythes when said base piece is positioned in the cementing means of one of said wythes; a female member having a base piece with the free end of the base piece bent upon itself to form a hook, said hook positioned about a portion of

the loop of said male member so that said female member may be positioned in a plane parallel to the plane of said base piece of the male member for positioning the female member in the cementing means of opposed spaced wythes of a cavity wall whereby said wythes may be tied together as a unit.

3. A reversible wall tie for cosecuring spaced wythes formed of horizontal courses of block elements secured together by cementing means, comprising: a male member having a base portion substantially disposed in a single plane for installation in the cementing means between a single pair of courses of one wall wythe with elongated means extending from the base portion into the space between said wythes, and a male connector including a loop having upper and lower outer portions connected to said elongated means and an inner portion extending substantially rectilinearly between said outer portions perpendicularly to the plane of the base portion to be disposed substantially vertically in said space between said wythes; and a female member having a base portion for installation in the cementing means between courses of the other wall wythe with elongated means extending from the base portion into said space between said wythes, and a female connector including a turned distal end of said elongated means slidably engaging said inner portion of the male member for interlocked relationship therewith at substantially any point along the vertical extent thereof.

4. The wall tie of claim **3** wherein each of said connectors comprises a substantially closed loop for maintaining assembled relationship of said male and female members.

5. The wall tie of claim **3** wherein said inner portion of the male member connector has a rectilinear extent preselected to be substantially at least the height of one course of the wall wythe in which it is to be provided.

6. The wall tie of claim **3** wherein said inner portion of the male member connector extends substantially equally in opposite directions from a mid-portion aligned with said base portion whereby said inner portion may extend substantially equally above and below the level of the cementing means in which the male member base portion is disposed.

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