Nov. 21, 1933. S. C. AWBREY 1,936,223

WALL TIE

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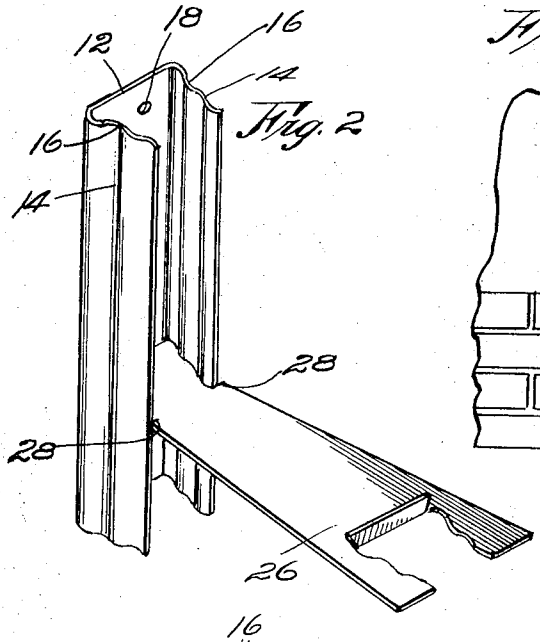
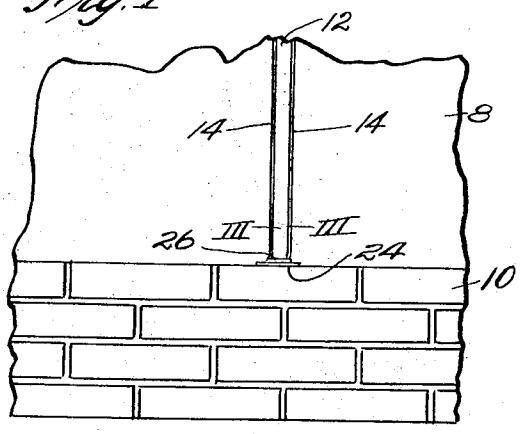


Fig. 2

Fig. 1



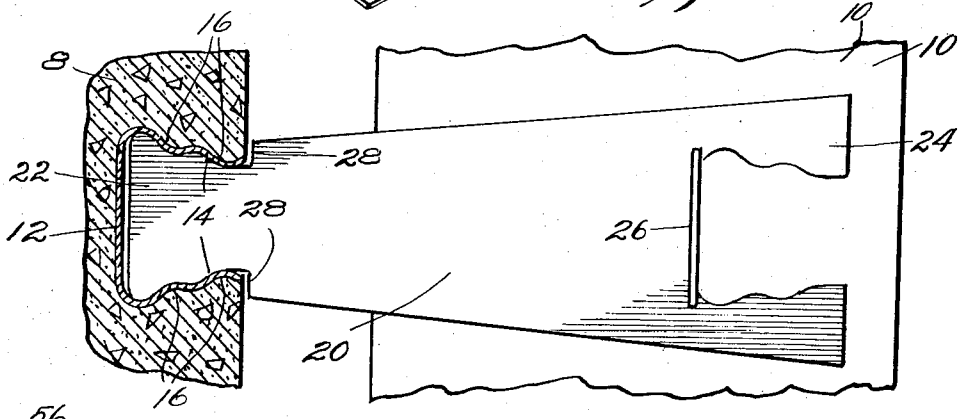


Fig. 3

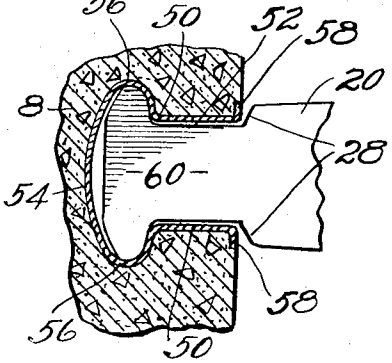


Fig. 4

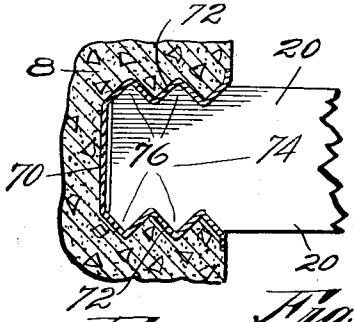


Fig. 5

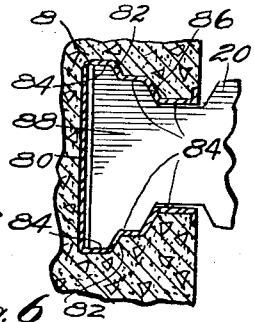


Fig. 6

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WALL TIE

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6 Claims. (Cl. 72—103)

This invention relates to building structures and particularly to the construction of walls thereof having a main cementitious body portion or main element which is usually faced with blocks of brick or tile laid in courses and it is the primary object of this invention to provide a tie for the component parts of the building wall which will effectually tie the same together and which will afford relative adjustment in order that the anchor portion of the wall-tie might be moved to the operative position between the courses of blocks.

One of the objects of the invention is to provide a wall-tie for the above mentioned purpose, which includes simply constructed inter-engaging parts, one of which, being a channel of special contour, is susceptible of being imbedded in the concrete main building structure in a manner which precludes its pulling out and which presents an effective engaging groove in the main building structure that is lined to receive one end of a laterally projecting anchor.

Another object of the invention is the provision of a wall-tie having a channel and anchor formed to present inter-engaging undulations, the undulations of the channel being formed longitudinally of the sides thereof and preferably extending their full length. The undulations of the anchor being formed at the opposite edges thereof to inter-engage the channel sides in a manner which permits relative longitudinal movement along the channel, yet precludes lateral movement or displacement after the channel and anchor have been operatively associated.

Specific details of construction which enter into the manufacture of a wall-tie made in accordance with this invention, and which in this instance are extremely important, will be clearly brought forth in the following specification, referring to the accompanying drawing wherein

Figure 1 is a fragmentary view of a building structure showing the component parts of the wall being secured together by a wall-tie made in accordance with this invention.

Fig. 2 is an enlarged perspective view of the preferred form of wall-tie showing channel and anchor in operative relation.

Fig. 3 is an enlarged fragmentary sectional view taken on line III—III of Fig. 1 illustrating the parts of the building wall and wall-tie in place.

Fig. 4 is a fragmentary cross sectional view through a modified form of channel and anchor.

Fig. 5 is a similar view showing another form of construction and

Fig. 6 is a cross sectional view through an even further modification of the preferred form.

Like reference characters are used herein to designate similar parts throughout the views and the numeral 8 indicates the main wall or element of a building structure which is made up by pouring concrete into forms built for the purpose and which support the hereinafter described channel to be embedded therein. 10 indicates the building face which is made up of courses of brick or tile, between which courses lies the anchor forming a part of this invention, held against lateral movement by the channel in wall 8.

Referring now to Figs. 1 to 3 inclusive and describing the preferred embodiment of the invention 12 indicates a base wall of the channel from which projects the sides 14 formed to present a series of undulations 16 extending longitudinally of sides 14 and preferably their entire length. Sides 14 preferably have their free edges flared outwardly to present an entrance to the channel which is smooth and unobstructed, and which joins the wall 8 in a smooth manner which performs the duty of reinforcing the edge, rather than allowing the same to be presented directly to the anchor. Suitable perforations 18 should be provided to permit nailing or otherwise securing the channel to the form for wall 8 as it is being constructed. Sides 14 approach each other as their free edges are approached and a wedge-shaped cross section is presented, the sides of which are undulated to receive the similarly formed anchor 20 which has an edge contour at the end entering the channel which is coextensive with the inner cross sectional contour of the channel. This end 22 formed on anchor 20 is formed during the manufacture of the anchor by cutting the same from material in step-by-step fashion, which when the anchor 20 is completed, presents a bifurcated end 24; the inner edge of said bifurcation having the same contour as the outer edge of end 22. A perpendicularly projecting lip 26 may be formed along the base of the bifurcation 24 and it is to be noted that the outer end of this anchor 20 might be formed to present structure adapted to engage between courses of any material without deviating from the basic function. Shoulders 28 formed at the meeting line between the body of anchor 20 and the specially formed end 22 serve as abutments to eliminate excessive play in the event the fit between the channel and end 22 is not snug. It is notable that anchor 20 is flared so that the

projected end 24 presents a greater surface than the end 22 slidably engaged by the channel.

In Fig. 4 is illustrated the first modified form which deviates from the broad principal of the invention only through the specific construction of the inter-engaging end of the anchor 20 and the channel. In this instance the channel has side walls 50 disposed relatively close together adjacent their free edges to present a neck 52 relatively narrow with respect to the main portion of the channel formed between the arcuate base wall 54 and the enlarged undulations 56 which connect wall 54 and sides 50. Flanges 58 extend to each side of the channel along the entrance thereof and the engaging end 60 of anchor 20 is formed to present a similar outline at its edge as the inner cross sectional contour of the channel as shown. In this instance, the shoulders 28 may be angled slightly to facilitate movement of anchor 20 longitudinally along the channel.

In Fig. 5 the channel is formed very similarly to the channel illustrated in the preferred embodiment. The base wall 70 has extending therefrom a pair of sides 72 which are undulated longitudinally their entire length, but the undulations are rolled therein to present more abrupt corners at the points of turn, and the walls 72 in this instance are not disposed to approach each other as their free edges are reached. The end 74 of anchor 20 which is stamped to conform to the undulations formed in the channel of this modified form may be moved laterally into and out of the channel simply by successively stepping projections 76 from one undulation to the other. Since the sides 72 of this form of channel are parallel, the end 74 of anchor 20 may be moved along therebetween in the manner mentioned. Thus a large number of anchors engaging a channel of this form throughout a course of brick or the like 10 may be disposed the same distance from the main wall 8 without the use of measuring instruments. Also, this form of tie is especially adapted to be used in tying facings to an irregularly surfaced main building element.

Referring to Fig. 6, wherein the third modification of the wall-tie is shown, it is to be observed that the base wall 80 has sides 82 extending therefrom which are formed to present a plurality of parallel steps 84 which are disposed in different planes and joined by angled walls 86 in a manner which presents a cross section of the channel substantially like that shown in the preferred embodiment. The inner end 88 of this anchor 20 is, like all the rest, punched to present a contour which allows all of the wall 82 and 86 to engage the edge thereof to lend strength when the tie is in the operative position. The neck adjacent the entrance to this channel is relatively narrow with respect to the main body and a large quantity of cementitious substance is presented in the line of lateral pull to prevent displacement of the anchored end 88.

While a number of specific forms have been shown and illustrated, it is to be remembered that the basic concepts of the invention are directed to the novel formation of channel sides which engage the end of an anchor in a manner to lend the greatest amount of strength thereto as lateral force is exerted which would normally pull the anchor from position and perhaps dislodge the channel. The sides of the channels are all formed to present a major amount of gripping surface, both for the anchor member and the substance from which the main wall is made. The various forms of undulations provided along the sides of these channels present surfaces to the anchor which are practically perpendicular to the direct line of pull and the construction of this wall-tie to this extent is novel and extremely valuable. This point of invention and structural feature is shown in all forms of the wall-tie illustrated and described.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A wall-tie comprising a channel and an anchor, said channel having rigid side walls and a series of longitudinally extending undulations formed in each side wall, said anchor having one of its ends formed to present an edge contour substantially like the cross sectional contour of said channel, whereby the same is slidable longitudinally thereof and a portion of the anchor projecting from said channel having a bifurcated end and a perpendicularly projecting lip extending therefrom.

2. A wall-tie comprising a channel and an anchor, said channel being non-flexible and including a base wall, a pair of sides extending therefrom and a series of longitudinally extending undulations formed in each of said side walls to produce opposed inturned ribs, the free edges of each wall terminating in an outwardly extending flare.

3. A building construction comprising a wall, the body material whereof is shaped to form a groove, the entrance thereof being narrower than the interior thereof and having its opposite side walls longitudinally corrugated to present oppositely disposed ribs and grooves, and an anchor having one end thereof formed to substantially conform to the cross sectional contour of said groove and the other end thereof being formed to engage a supported element.

4. A building construction comprising a wall, a channel member, the entrance thereof being narrower than the interior thereof and having its side walls longitudinally corrugated, imbedded in the face of said wall to form a non-yielding groove therein, and an anchor formed to engage in said groove for longitudinal movement and to extend therefrom and engage a facing element.

5. A building construction comprising a wall, a narrow throated channel imbedded in said wall, a series of oppositely disposed longitudinal ribs and grooves formed in the side walls of said channel, the plane of corresponding oppositely disposed grooves and ribs in said side wall being in parallel relation with the plane of the back wall of said channel; and an anchor having one end thereof shaped to substantially conform to the interior cross sectional contour of said channel.

6. A wall tie comprising a channel having an inwardly projecting rib formed on each of the side walls of said channel in opposed relation and with their adjacent ridges in a plane parallel with the plane of the open face of the channel; and an anchor having one of its ends formed to present an edge contour substantially corresponding with the cross sectional contour of said channel.

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