Nov. 14, 1933. S. C. AWBREY 1,934,760

CONSTRUCTION TIE

Filed May 25, 1931

Fig. 1

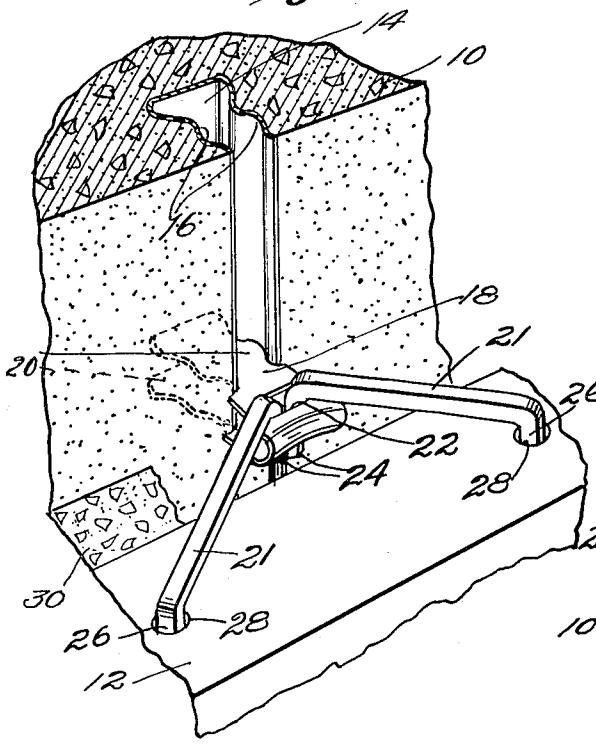


Fig. 3

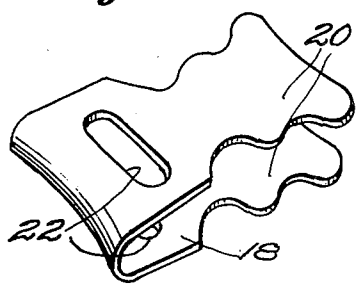


Fig. 2

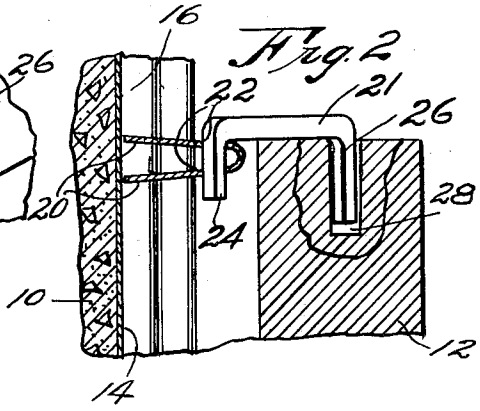


Fig. 5

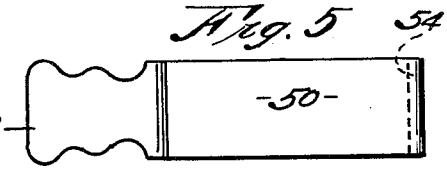


Fig. 4

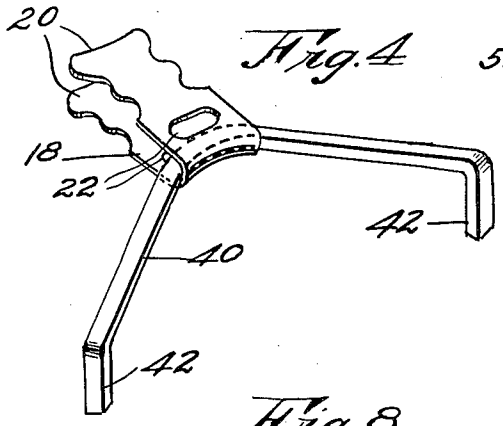


Fig. 6



Fig. 7

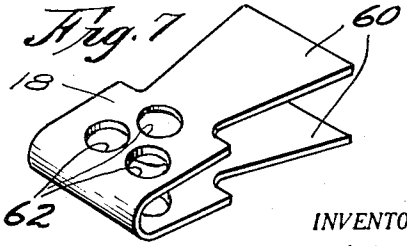
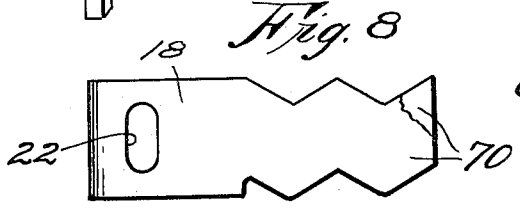


Fig. 8



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CONSTRUCTION TIE

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9 Claims. (Cl. 72—101)

This invention relates to a wall tie for building structures and particularly to that type of wall tie adapted for use in a structure having a main wall element to which is to be secured a facing of brick, stone, terra cotta, or any other block-shaped material.

One of the principal objects of this invention is the provision of a simple and efficient means for binding the facing element to the main wall.

Another object of the present invention is the provision of a wall tie having an especially formed anchor adapted to be fitted into a channel formed in the face of the wall to clampingly engage the sides thereof, said anchor being made of resilient material and constructed to eliminate accidental movement of the anchor when positioned in the channel and at the same time to permit it to be moved longitudinally therein for adjustment for positioning it in proper relation to the courses of the facing material.

Other objects of the invention are simplicity and economy of construction, ease and convenience of installation, and accuracy and stability of operation. With these general objects in view, reference will now be had to the accompanying drawing, in which:

Figure 1 is a fragmentary perspective view of a building structure comprising a concrete wall and a facing element secured thereto in accordance with the principles of this invention.

Fig. 2 is a fragmentary, sectional view showing the wall tie in operative position in a building structure.

Fig. 3 is an enlarged, detached, perspective view of one form of the anchor member.

Fig. 4 is a perspective view of the anchor member shown in operative relation with an anchor rod of modified form.

Figs. 5 and 6, respectively, are plane and side elevation views of a modified form of the anchor member, which is adapted for use without anchor rods.

Fig. 7 is a perspective view of a modified form of the anchor member adapted for use in a dove-tail slot, and,

Fig. 8 is a plane view of a modified form of the anchor member adapted to fit in a channel which is zig-zag in cross section and so constructed whereby opposite sides thereof are parallel.

Like reference characters designate similar parts throughout the several views and the numeral 10 designates a main building wall or columns thereof, constructed of concrete or similar material. A facing element 12, made of brick, stone, terra cotta, or the like, is usually of relatively thin structure and necessarily must be secured to the main wall in order to hold it in proper position. This facing element is made of material usually of a block form, and is laid in courses, the meeting lines of which cannot be definitely determined, thus making it necessary to provide a tie member that is adjustable vertically so that these elements may be properly positioned. A suitable channel member 14 is secured by nailing to the inner face of the form wall during the construction of the building, in such a manner that when the concrete has been poured and the form boards removed, a channel with its entrance at the outer surface of the wall will be formed therein. It is apparent that this channel may be of many forms since it is only necessary that it have offset portions in the side walls thereof to preclude outward movement of the anchor transversely of the channel member.

The form of channel member as shown in Figs. 1 and 2 provides for corrugated side walls 16, so constructed that oppositely disposed channels and ridges are presented by the two side walls, thus producing a symmetrical cross sectional area.

However, it is apparent that channels of other cross sectional views may be used to conform to the anchors 7 and 8, or any other anchor having equivalent anchoring offsets. Furthermore, it is apparent that these channels may be formed in the wall material itself and the metal channel eliminated. The anchor 18 is preferably made of substantially U-shape with a portion 20 thereof adjacent its free ends shaped to conform to the cross sectional area of the channel member. Moreover, the legs of this anchor are preferably outwardly diverging, for purposes hereinafter set forth. The anchor is preferably made of such a length that the portion adjacent the closed end thereof will extend outwardly beyond the channel a distance which will not interfere with the proper placing of the facing element.

While the above is the preferred construction, it is apparent that this anchor might in certain cases, be so constructed as to lie wholly within the confines of the channel member. For the reception of suitable anchor rods 21, similar openings 22 are formed in the legs of the anchor member 18 for the reception of the angled end portion 24 thereof. The outer ends 26 of the rods 21 are also bent at right angles to the main body and are adapted to enter recesses 28 formed in the facing element 12.

In wall ties of this type one of the main difficulties experienced has been due to the fact that the anchor members would have a tendency to fall

downwardly in the vertically disposed slots during the construction operation and it is to overcome this difficulty that the anchor member of the present invention has been constructed.

In constructing a building of this character, the main wall 10 is first constructed with the channels formed therein as described above, then the workmen start laying the facing element. When it is desired to tie the facing element to the main wall, the formed portions 20 of the anchor 18 are inserted in the slot, then turned to the positions shown in Figs. 1 and 2 so that due to the angularity of the legs and to the fact that the portions 20 are shaped to substantially conform to the cross sectional contour of the channel, a clamping of the anchor to the side walls 16 will be effected. As stated above, the anchor 18 is preferably made of resilient material which will permit the closing together of the portions 20 during the turning operation of the anchor while being inserted in the slot. When so positioned, the anchor will maintain its fixed relation relative to the slot, but can be moved longitudinally therealong when the workman exerts a slight pressure thereon. When the anchor is properly positioned, the anchor rods are properly positioned, as shown in Figs. 1 and 2, mortar is laid to form the joint of the facing element, and the wall is continued upwardly in the usual manner.

Usually the space between the main wall 10 and the facing wall 12 is filled with a suitable material 30. When the single anchor rod 40, as shown in Fig. 4, is used, it is inserted through the loop formed by the anchor member with its bent ends 42 turned downwardly to engage recesses formed in the blocks of the facing element. This form has the advantage of producing a tie element, the parts of which are securely united to preclude accidental displacement. The unitary structure shown in Figs. 5 and 6 is such that no anchoring rods need be used and consists of a strip of sheet metal rebent on itself to form a body portion 50 with its free ends 52 spaced apart and outwardly diverging, and similarly shaped to conform to the cross sectional area of the slot in which it is to be used.

The closed end 54 of the body portion is turned at an angle to the body portion of the anchor, thus presenting an element adapted to be inserted in a recess formed in a stone or other facing block when the portions 52 are in operative relation with the slot.

Modified form as shown in Fig. 7 is substantially similar to that shown in Fig. 3, with the exception that the outer portion 60 thereof are of dove-tail shape to conform to the similarly shaped channel members. Also, openings 62, formed in opposite legs of the anchor, are so formed and positioned as to receive the anchoring rods in spaced apart relation. The zig-zag shape of the free end portions 70 present a structure which is adapted for use in a channel member in which the distance between like points of the side walls is always equal. In other words, the width of the opening of the channel is similar to the width of the interior of the channel in any plane parallel with the plane of the opening.

The invention as illustrated and described provides an adjustable method of anchoring brick, stone and terra cotta to concrete that gives the highest degree of strength, with substantial economies in time and labor, eliminates the necessity of measuring the course heights and the especially constructed anchors conform to the undulations of the slot and give a four-fold anchorage, preventing looseness between the anchor and the slot so that the pulling resistance is equally distributed to all anchors alike.

It is not desired to limit this invention to the structure shown and described since many modifications may be made without departing from the spirit of the appended claims.

What I claim is:

1. In a wall tie a channel member having its side walls formed at angles other than right angles to the base wall thereof, and a resilient substantially U-shaped anchor formed to clampingly engage the inside walls of said channel with the closed end portion thereof extending outwardly therefrom.

2. In a wall tie a channel member having an entrance narrower than the interior thereof, and a substantially U-shaped resilient anchor formed to clampingly engage the inner walls of said channel with the closed portion thereof extending outwardly therefrom.

3. In a wall tie a channel member having an entrance narrower than the interior thereof, and a substantially U-shaped resilient anchor having its free ends shaped to conform to the cross sectional area of said channel, said ends being relatively positioned to clampingly engage the walls of said channel when in the operative position.

4. A wall tie comprising a channel member having an entrance narrower than the interior thereof, and a substantially U-shaped resilient anchor having outwardly diverging legs formed to expand longitudinally of said channel clampingly engage the walls of said channel.

5. In a wall tie a channel member having an entrance narrower than the interior thereof, and a U-shaped anchor formed to clampingly engage the side walls of said channel and having openings formed in the legs adjacent the closed end thereof which is positioned outside of said channel.

6. In a wall tie a channel member having an entrance narrower than the interior thereof, a substantially U-shaped resilient anchor formed to clampingly engage the side walls of said channel and anchor rods adjustably attached to said anchor.

7. In a building construction a wall, the body material whereof is shaped to form a groove in the face of the wall, the entrance to said groove being narrower than the interior thereof, a supported element, and a substantially U-shaped resilient anchor having legs adapted to be spaced apart longitudinally in said groove to clampingly engage the walls thereof and an element connecting said supported element to said clamp.

8. The combination with a channel member having inclined side walls, of a U-shaped anchor made of resilient material and having the adjacent edges of the opposite legs thereof similarly shaped to substantially conform to the shape of the inner surface of the side wall of the channel.

9. In a wall tie, a channel member having an entrance narrower than the interior thereof and a substantially U-shaped anchor having its free ends shaped to substantially conform to the cross sectional area of said channel and adapted to be expanded longitudinally of said channel to engage the side walls thereof.

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