# United States Patent [19]

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[11] **3,750,360**

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[54] **SILL PLATE ANCHOR DEVICE**


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[21] Appl. No.: **209,635**

[52] **U.S. Cl.** ..... **52/714**, 52/295, 52/369

[51] **Int. Cl.** ..... **E04b 1/41**

[58] **Field of Search** ..... 52/712, 713, 714, 52/295, 369, 370, 695, 715



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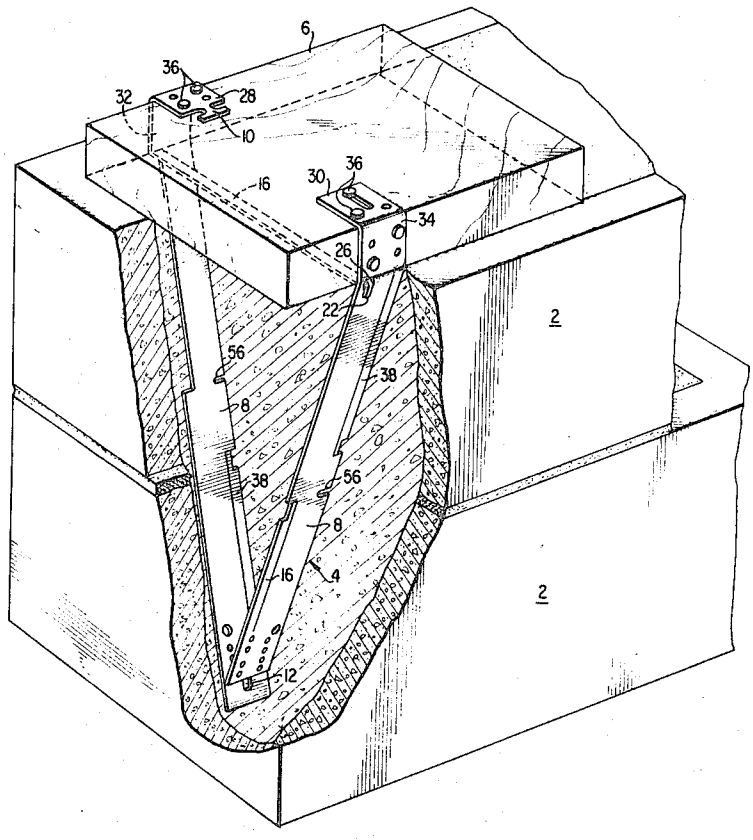
[57] **ABSTRACT**

An anchor device for securing a wood sill plate on masonry foundation or wall. The anchor device has a pair of side members which are joined together at the lower end and which are spaced apart at the upper end and the device is substantially V-shaped. The anchor device includes a bridge member which extends between the side members adjacent the upper end of the device. The bridge member maintains a predetermined distance between the side members. The ends of the respective side members include lateral portions which overlap the bridge member and the sill plate is received in the space between the lateral portions and the bridge member. Nail holes are provided in the lateral portions of the side members to permit the anchor device to be secured to the sill plate by nails. When installed, the lower portion of the anchor device is enveloped by the concrete of the foundation or wall.


**14 Claims, 5 Drawing Figures**



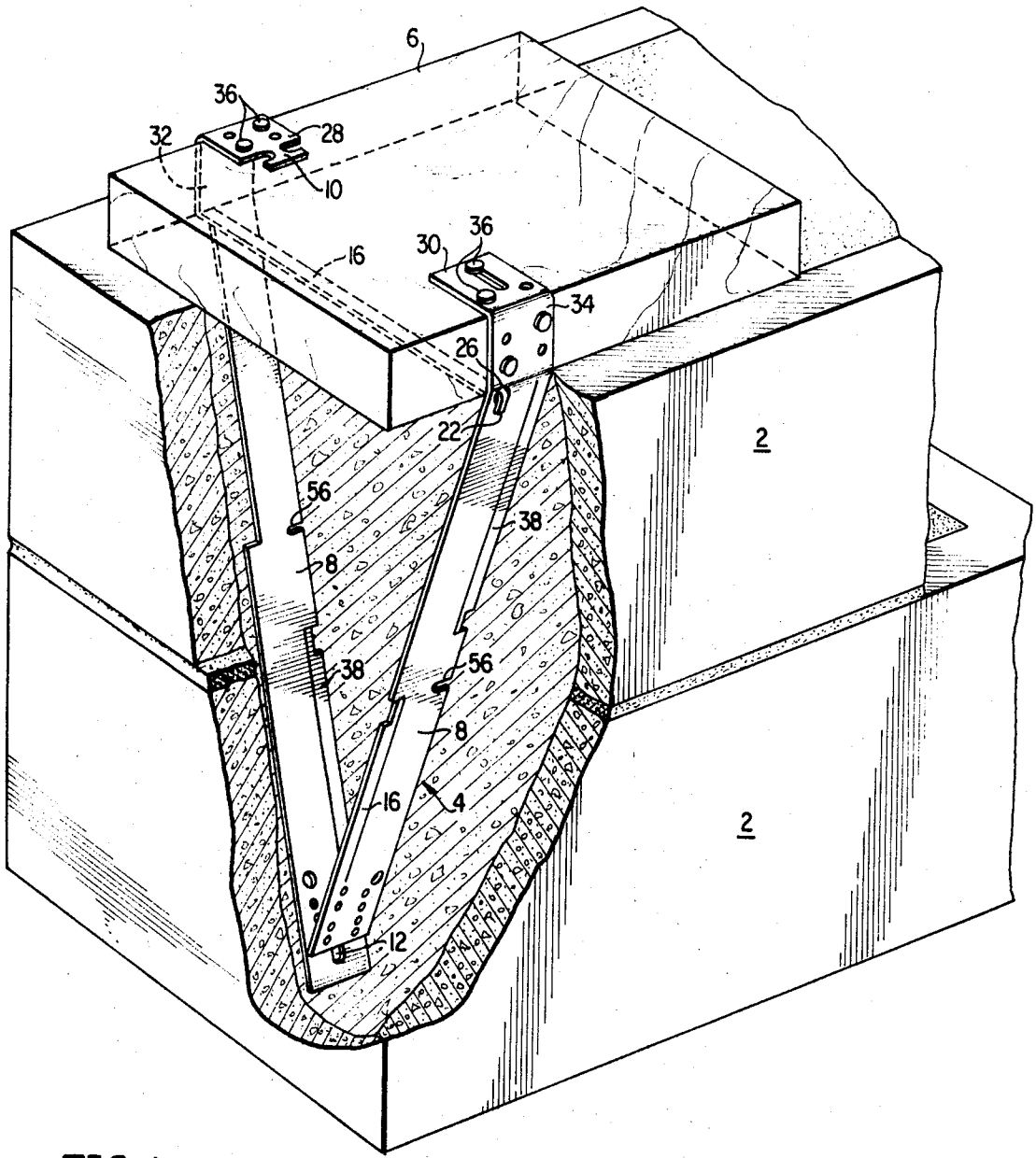



FIG. 1

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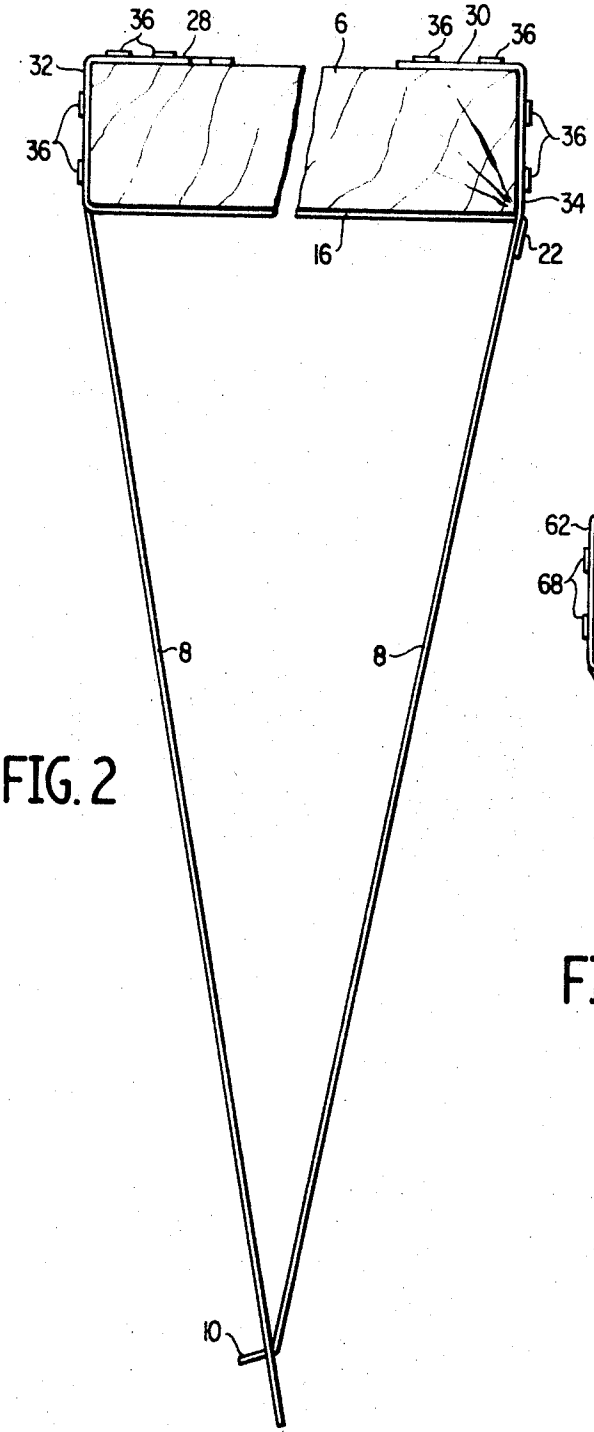
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FIG. 2

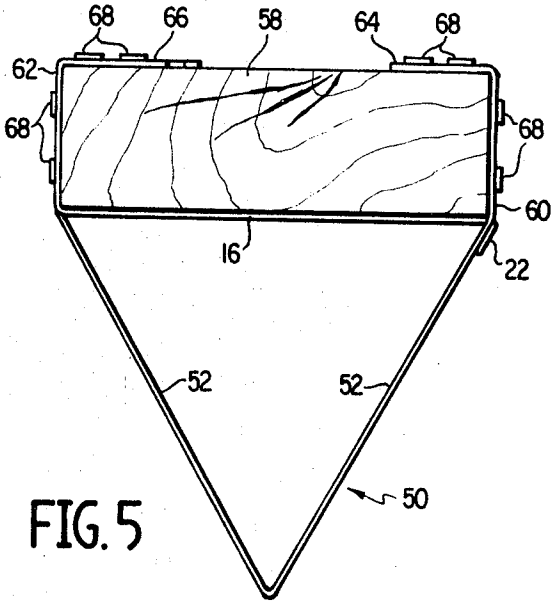
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FIG. 5

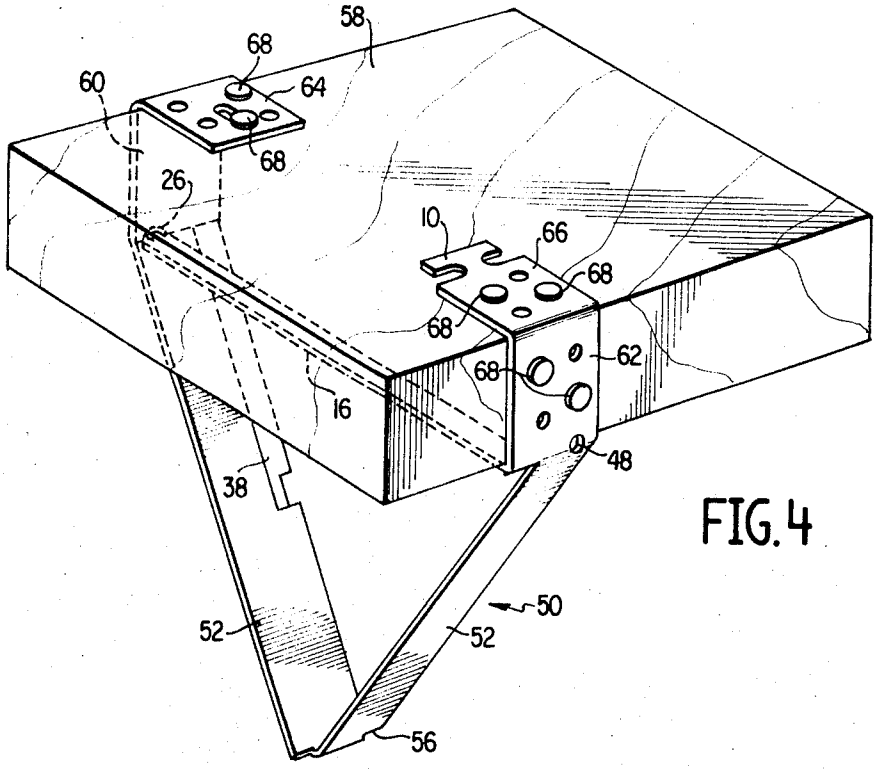
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FIG. 4

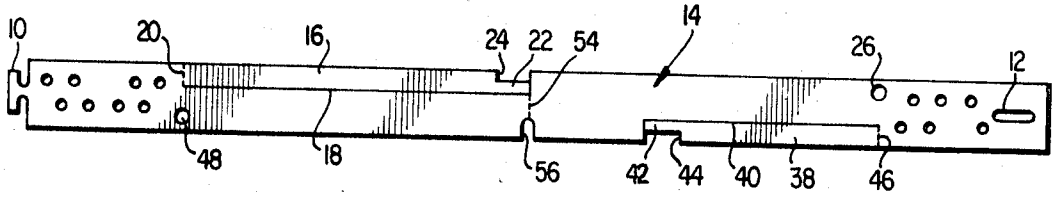
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FIG. 3

# SILL PLATE ANCHOR DEVICE

## BACKGROUND OF THE INVENTION

This invention relates to building construction, and more particularly to devices for securing wood components to masonry structures.

In constructing a wood frame building, it is customary practice to pour a concrete foundation wall or concrete slab, or to lay a wall of cinder blocks, and then to secure a wood sill plate on the slab, or at the top of the foundation wall. One method of securing the sill plate to the masonry structure is to place anchor bolts upright in the wet concrete. Holes are drilled in the sill plate in alignment with the anchor bolts. When the concrete has hardened, the sill plate is applied over the anchor bolts and secured in place by a washer and nut on each anchor bolt.

One disadvantage of using anchor bolts is that holes must be drilled in the sill plate at the proper locations to be aligned with the bolts when the sill plate is properly positioned on the slab or wall. The problem of alignment becomes more critical when many anchor bolts are used to secure a long sill plate in plate. If the holes are not properly aligned, the sill plate cannot be placed at the desired position. Often, a skilled carpenter is required to measure the location of the holes for the anchor bolts. Also, to overcome the need for making critical measurements, the carpenter may drill large diameter holes to permit lateral movement of the sill plate relative to the anchor bolts. It would then be necessary to use large diameter washers to bridge the diameter of the holes. If the nuts on the anchor bolts are not securely tightened, the sill plate may shift relative to the slab or wall on which it rests.

Attempts have been made to substitute connectors of various types for the anchor bolts. One type of anchor device that had been proposed is in the form of an elongated sheet metal device. The body portion is intended to be embedded in the concrete in alignment with the middle of the sill plate in the same manner as an anchor bolt. At the upper end of the device, a pair of straps project outwardly in opposite directions along the bottom of the sill plate and are wrapped around the lateral edges of the sill plate, and are secured in place by nails. In the event of an upward force on the sill plate, which might be caused, for example, by heavy winds, the straps under the sill plate do not effectively resist this upward movement. This problem is aggrevated by the fact that the metal straps are bent to the desired shape by the workman as he places them in the wet concrete. If the bending is done carelessly, then the straps cannot fit tightly around the sill plate and a secure anchor is not obtained.

## SUMMARY OF THE INVENTION

In view of the deficiencies of prior anchoring devices, it is an object of this invention to provide an improved sill plate anchoring device.

It is a further object of this invention to provide an anchoring device which securely holds a sill plate on a masonry structure.

A still further object of this invention is to provide an anchoring device which may be assembled by unskilled workers, but which, nevertheless, is accurately formed in the proper shape to receive standard sizes of sill plates.



Another object of this invention is to provide an anchoring device which may be conveniently and accurately positioned in wet concrete.

These objects are accomplished in accordance with a preferred embodiment of the invention by a sill plate anchor which has a pair of side members which are formed in a generally V-shape. The pointed lower end of anchor facilitates insertion of the anchor in wet concrete. At the upper end of the anchor, a bridge member extends between the side members to hold the side members at the proper spacing corresponding to the width of a sill plate that is to be used with the anchor. The upper ends of the side members are provided with nail holes for securing the side members to the sill plate. The side members include lateral portions which overlap the bridge member, so that the sill plate is held between the lateral portions and the bridge member. Preferably, the bridge member is bent outwardly from one of the side members and is connected with the other side member. In one embodiment of the invention, the side members are separate strips which are joined together at the pointed end of the device. In another embodiment of the invention, the side members are formed from a single strip which is bent approximately midway of its length to form the V-shaped device. Preferably, the same strip can be used for forming either embodiment of the device.

## DETAILED DESCRIPTION OF THE DRAWINGS

These preferred embodiments of the invention are illustrated in the accompanying drawings in which:

FIG. 1 is a perspective view of a first embodiment of the sill anchor plate as installed in a masonry structure;

FIG. 2 is a side elevational view of the anchoring device of FIG. 1;

FIG. 3 is a top plan view of the blank from which the first and second embodiment of the anchoring device are formed;

FIG. 4 is a perspective view of the second embidment of the anchoring device according to this invention; and

FIG. 5 is a side elevational view of the second embodiment of the anchoring device.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG. 1, a foundation wall constructed of structural building blocks 2 is illustrated. These conventional blocks 2 are hollow and the interior of the blocks is filled with concrete. The anchor device of this invention, in accordance with the first preferred embodiment is indicated at 4 in FIG. 1. The anchor device 4 secures a wood sill plate 6 at the top of the wall formed by the blocks 2.

The anchor device 4 includes a pair of side members 8. The side members 8 are joined together by the interlocking of a key 10 on one side member with a slot 12 in the other side member. A blank 14 from which the side members 8 are formed is illustrated in FIG. 3. The key 10 is provided at one end of the blank 14 and the slot 12 is provided at the opposite end of the blank 14. In order to form the anchor device 4, as shown in FIG. 1, a pair of blanks 14 are arranged with the slot 12 in one blank receiving the key 10 in the other blank. The blanks 14 are then arranged in the shape of a V to form the side members 8, as shown in FIG. 2. The junction

between the side members 8 is located at the bottom pointed end of the V.

The side members 8 are joined together at the upper end by a bridge member 16. As shown in FIG. 3, the bridge member 16 has been cut from the blank strip by a longitudinal slot 18 and is bent outwardly along a transverse bend line 20. The bridge member 16 includes a narrow projection 22 and a transverse shoulder 24.

The projection 22 extends through a hole 26 formed in the other side member 8, as shown in FIG. 1. The projection 22 is bent downwardly while the inside surface of the member 8 engages the shoulder 24, thereby securely holding the bridge member and the other side member together.

A substantially rigid anchor device is formed by the key and slot connection at the lower end of the device and by the bridge member at the upper end of the device. Since the transverse edge of the side member 8 adjacent the key 10 bears against the flat face of the opposite side member 8, the side members are unable to twist relative to each other when they are secured together at an acute angle, as shown in FIG. 2. The bridge member 16 forms a secure connection between the upper ends of the side members 8 to maintain the members at the proper spacing.

The side members 8 each extend above the bridge member 16 and include lateral portions 28 and 30 which extend inwardly toward each other. The sides between the portions 28 and 30 and the bridge member 16 are indicated at 32 and 34 respectively. The sill plate 6 is received between the sides 32 and 34 and rests on member 16. Preferably, the rectangular space formed by the bridge member 16, the upright sides 32 and 34, and the lateral portions 28 and 30 is substantially the same as the rectangular cross section of the sill plate 6, so that the plate is firmly anchored and is unable to move laterally or vertically. Nails 36 are driven through holes formed in the sides 32 and 34 and in the lateral portions 28 and 30 to prevent longitudinal movement of the sill plate relative to the anchor.

The anchor device 4 may be adjusted for securing a narrower sill plate 6. For example, if the anchoring device as assembled in FIGS. 1 and 2 is the appropriate size for securing a sill plate that is nominally 2 inches by 6 inches, and it is desired to use the anchor device with a sill plate that is nominally 2 inches by 4 inches, the only change required is to substitute the shorter bridge member 38 (FIG. 3) for the longer bridge member 16. The bridge member 38 is formed in the blank 14 by a longitudinal slot 40 and has a narrow projection 42 with a transverse shoulder 44. The bridge member 38 is bent outwardly from the blank 14 along a transverse bend line 46 and the projection 42 extends through a hole 48 in the opposite side member 8. Since the bridge member 38 is shorter than the bridge member 16, the distance between the opposite sides 32 and 34 is less than that shown in FIGS. 1 and 2. The projection 42 extends through the hole 48 and is bent downwardly in the same manner as the projection 22 illustrated in FIGS. 1 and 2. Thus, the bridge member 38 securely holds the upper ends of the side members 8 with the desired spacing between them to receive a sill plate.

A second preferred embodiment of the invention is illustrated in FIGS. 4 and 5. In this embodiment, the side members 52 are formed from a single one of the blanks 14 (FIG. 3) which is bent along the bend line 54. A notch 56 is provided in the blank 14 to reduce the cross-sectional area at the bend line 54. The longer bridge member 16 is bent outwardly from the blank 14. The projection 22 on the bridge member 16 extends through the hole 26. The inner side of the side member 52 abuts against the shoulder 24 and the projection 22 is bent downwardly to maintain the upper end of the side members 52 at the predetermined distance corresponding to the width of a sill plate 58 which is received between the opposite sides 60 and 62. The upper ends of the side members 52 are bent inwardly to form lateral portions 64 and 66 which overlap the bridge member 16. Nails 68 extend through holes in the opposite sides 60 and 62 and in the lateral portions 66 and 68 to hold the sill plate 58 securely in position.

If the device 50 is to be used for anchoring a narrow sill plate, the shorter bridge member 38 may be substituted for the longer bridge member 16. Instead of bending the member 16 outwardly, as shown in FIG. 4, the member 38 is bent outwardly at the bend line 46 and the projection 42 is inserted through the hole 48 in the other side member 52. The projection 42 is then bent downwardly in the same manner as the projection 22 illustrated in FIG. 1.

The anchoring devices of this invention are installed by pushing the lower pointed end of the device 4 or 50 into wet concrete at the desired location. The pointed lower end facilitates insertion of the device. As the side members 8 or 52 penetrate through the wet concrete, the concerete slumps into the space on the upper side of the respective side members, so that when it hardens, the concrete will completely surround each of the side members. The bridge member 16 serves as a stop for limiting penetration of the anchor member in the wet concrete. Preferably, the bridge member 16 rests on the upper surface of the concrete. The lateral portions 28 and 30 of the embodiment of FIG. 1 and 64 and 66 of the embodiment of FIG. 4 are initially upright extensions of the adjoining sides. After the concrete has hardened, the sill plate 6 or 58 is inserted between the sides and tests on the bridge member 16. The lateral portions are then bent downwardly to overlap the top surface of the sill plate. Nails 36 or 68 are driven into the sill plate to secure the plate to the anchor device.

The longer anchoring device of the embodiment of FIG. 1 may be of the order of 15 inches, so that it extends downwardly through two courses of cinder block, thereby providing a secure anchor for the sill plate. The shorter anchor device, as shown in FIG. 4 may be of the order of 6 inches in depth for use in concrete slabs, for example. Often a job site will require anchor devices of both the shorter and the longer lengths. Instead of having to purchase anchor bolts or other conventional devices of different lengths, the anchoring device of this invention permits the use of a single blank 14 to form either the shorter or longer type of anchoring device. Also, the same blank 14 may be used for narrow or wide sill plates. It is contemplated that the builder will maintain a stock of blanks 14 and assemble at the job site whatever length and widths of anchoring devices are required. Since the blanks 14 are flat strips, very little storage space is required and these blanks may be shipped inexpensively to the job site.

The anchor devices in accordance with this invention are particularly useful with prefabricated wall panels or

prefabricated building units. The anchor devices are installed in the concrete and are aligned with the desired position of a prefabricated wall panel. The lateral portions 28 and 30 or 64 and 66 extend upwardly to allow the sill at the bottom of the wall panel to be received between the opposite sides 32 and 34 or 60 and 62 of the anchor devices. Since the anchoring devices engage the sill along the opposite sides, there is no need to position the sill accurately with respect to any one of the anchoring devices, as is necessary when anchoring bolts are used. The wall panel may be secured in place by bending over the lateral portions of the anchoring devices and nailing into the sill plate. If a wall stud should happen to be positioned in the panel so that it interferes with the lateral portions of the anchoring device, the lateral portions may remain upright and the nails may be driven into both the sill and the stud. The lateral portions may also remain upright if the center portion of the prefabricated panel is inaccessible.

While this invention has been illustrated and described in accordance with several preferred embodiments, it is recognized that variations and changes may be made therein without the departing from the invention as set forth in the claims.

What is claimed is:

1. An anchor device comprising a pair of elongated side members, connector means joining said side members together adjacent one end of said side members, a bridge member extending between said side members, said bridge member being spaced from said connector means longitudinally of said side members and said bridge member including means for maintaining a predetermined distance between said side members at said bridge member, said side members including side portions spaced apart by said bridge member, said side members being formed of thin sheet material, said bridge member being integral with one of said side members, an additional bridge member integral with the other of said side members, said bridge members having a length different from each other, whereby said predetermined distance between said side members may be selected by using one or the other of said bridge members, and whereby a sill plate may be positioned on said bridge member and between said side portions and concrete may be cast around said side members to secure said anchor device in place.

2. The anchor device according to claim 1 wherein said side members are joined together in a single integral strip, said connector means including a bend substantially midway of the length of said strip.

3. The anchor device according to claim 1 wherein said connector means includes a connector element in each of said side members, said connector elements cooperating to join said side members together.

4. An anchor device comprising a pair of elongated side members, connector means joining the side members together adjacent one end of of said side members, a bridge member extending between said side members, said bridge member being spaced from said connector means longitudinally of said side members and said bridge member including means for maintaining a predetermined distance between said side members at said bridge member, said side members including side portions spaced apart by said bridge member, said side members being formed of thin sheet material, said bridge member being integral with one of said side members and the other of said side members having a hole aligned with said bridge member, said bridge member having a projection and having a shoulder adjacent said projection, said projection extending through said hole in said other side member and overlapping the outer side of said other side member with said shoulder engaging the inner side of said side member, whereby said bridge member securely positions said side members relative to each other, and whereby a sill plate may be positioned on said bridge member and said overlapping side portions in concrete may be cast around said side members to secure said anchor device in place.

5. An anchor device comprising a pair of elongated thin strips, each of said strips having connector means cooperating to join said strips together adjacent one end of said strips, bridge means extending between said strips adjacent the opposite end of said strips for maintaining said strips a predetermined distance apart from each other, said bridge means being integral with one of said strips, and said strips each having side portions spaced apart by said bridge means, whereby a sill plate may be received between the side portions and secured in place when said strips are imbedded in concrete.

6. An anchor device comprising a pair of elongated thin strips, each of said strips having connector means cooperating to join said strips together adjacent one end of said strips, bridge means extending between said strips adjacent the opposite end of said strips for maintaining said strips a predetermined distance apart from each other, and said strips each having side portions spaced apart by said bridge means, said connector means includes a key adjacent one end of each of said strips and a slot adjacent the other end of each of said strips, one of said keys in one of said slots cooperating to join said strips together, whereby a sill plate may be received between said side portions and secured in place when said strips are imbedded in concrete.

7. The anchor device according to claim 6 wherein said bridge means includes an elongated bridge member on one of said strips, said bridge member extending between said strips and having a longitudinal projection and a shoulder adjacent the end of said member, the other of said strips having a hole aligned with said bridge member, said bridge member projection extending through said hole and overlapping the outer side of said strip, said shoulder engaging the inner side of said strip, whereby a predetermined spacing is maintained between said strips by said bridge member.

8. The anchor device according to claim 7 wherein said bridge member extends from adjacent one of the opposite lateral edges of said strip, and said hole in said other strip is adjacent one of the opposite lateral edges of said other strip in position to be aligned with said bridge member.

9. An anchor device comprising an elongated strip having opposite ends, said strip having an acute angle bend substantially midway of its length to form a pair of side members in substantially opposed relation, a bridge member extending between said side members, said bridge member being spaced from said bend and being spaced from said strip ends, said side members including side portions spaced apart by said bridge member, whereby a sill plate may be received between said strip ends for securing said plate in place when said side members are imbedded in concrete.

10. An anchor device comprising an elongated strip, said strip having an angle bend substantially midway of

its length to form a pair of side members in substantially opposed relation, bridge means interconnecting said side members, said bridge member being spaced from said bend, said side members including side portions spaced apart by said bridge means, said bridge means includes a bridge member projecting outwardly from one of said side members, the other of said side members having a hole therein, said bridge member having a projection in a shoulder adjacent one end of said member, said projection extending through said hole and overlapping the outer side of said side member and said projection engaging the inner side of said side member, whereby said bridge member maintains said side portions a predetermined distance apart from each other and a sill plate may be received between said side portions for securing said plate in place when said side members are imbedded in concrete.

**11.** The anchor device according to claim **10** wherein said bridge member is adjacent one lateral edge of said side member and said hole and said other side member is laterally offset and aligned with said bridge member, said strip having a reduced cross-sectional area at said bend than the cross-sectional area of said strip adjacent said bend, whereby said reduced cross-sectional area causes said bend to form at the approporiate position in said strip.

**12.** A blank for use in forming sill plate anchors comprising an elongated, substantially flat, thin strip, said strip having opposite lateral edges, a first longitudinal slot in said strip adjacent one of said lateral edges and a second longitudinal slot adjacent the other of said edges, said slots each forming an elongated bridge member capable of being bent perpendicular to said strip, and holes in said strip adjacent said opposite lateral edges to receive the end of a bridge member.

**13.** The blank according to claim **12** wherein said bridge members each has a longitudinal projection and a lateral shoulder arranged for cooperation with one of said holes, and said strip includes nail holes adjacent opposite ends of said strip.

**14.** The blank according to claim **12** wherein said connecting means includes a longitudinal slot adjacent one end of said strip and a key adjacent the opposite end of said strip.

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