

Oct. 21, 1952

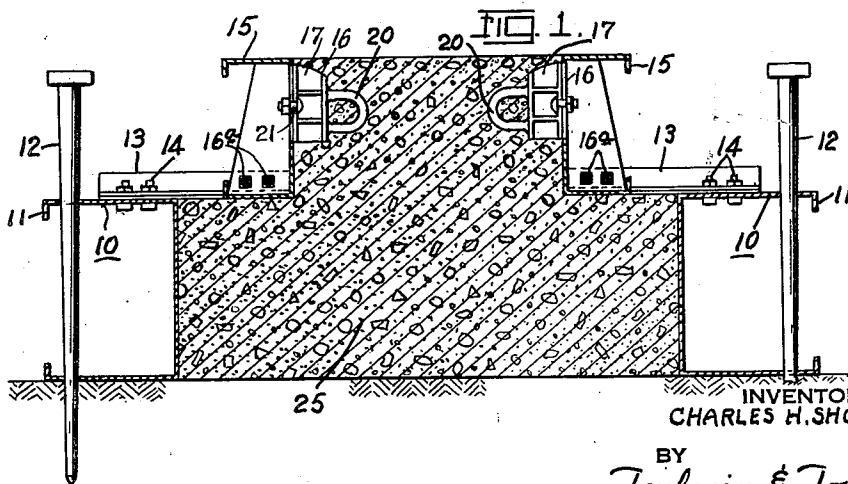
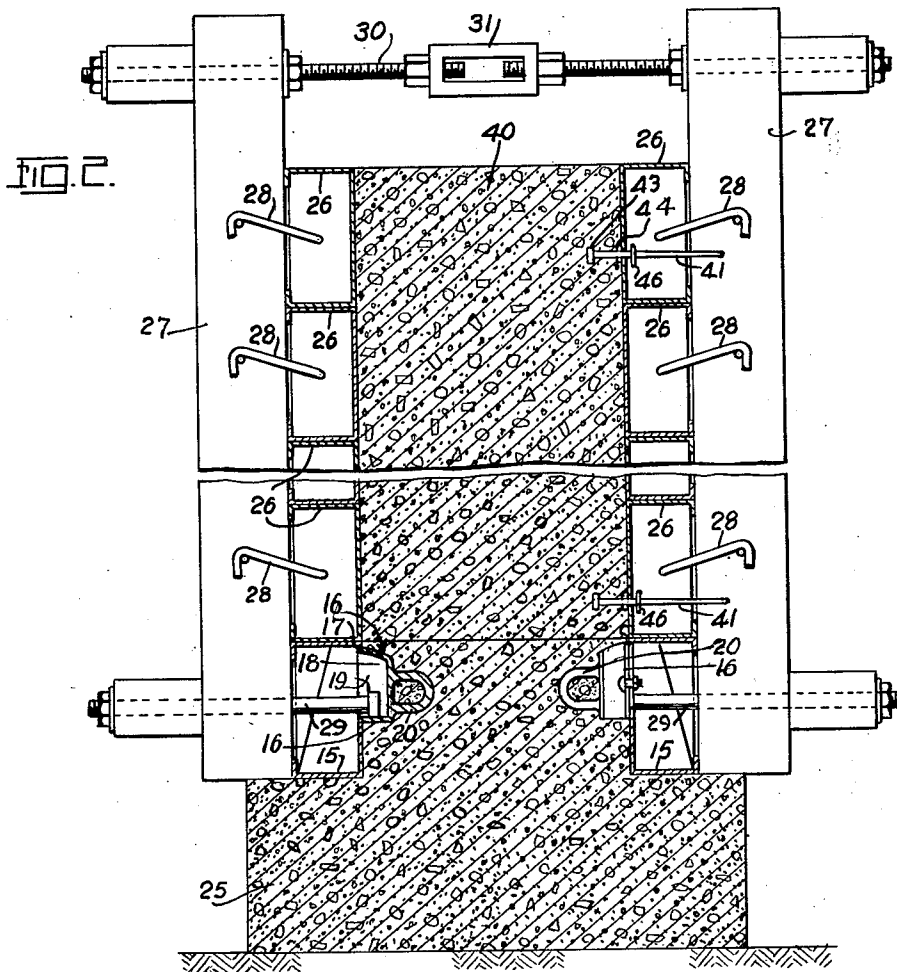
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2,614,311

FORM FOR MOLDING CONCRETE FOOTINGS AND WALLS

Filed July 2, 1947

4 Sheets-Sheet 1



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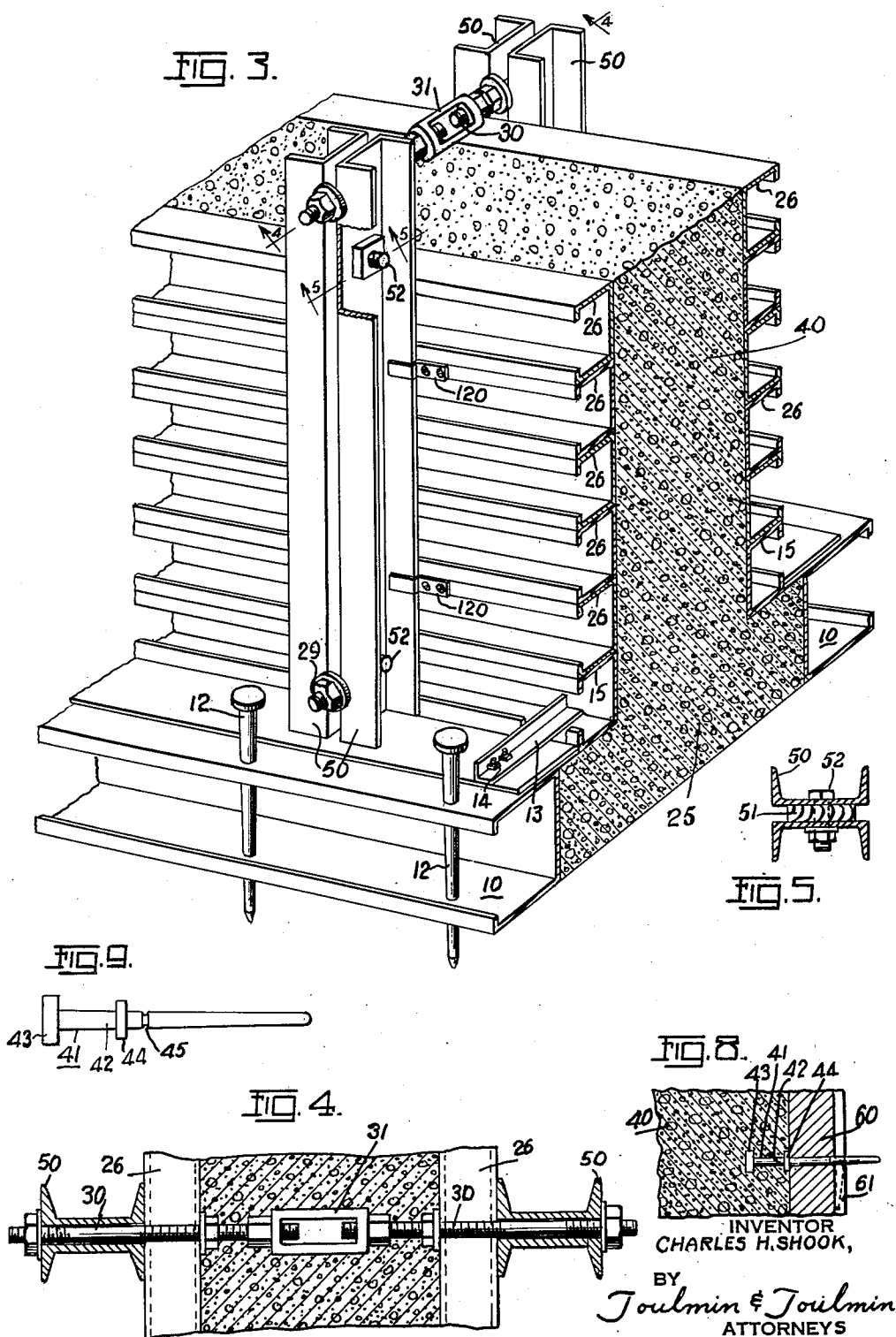
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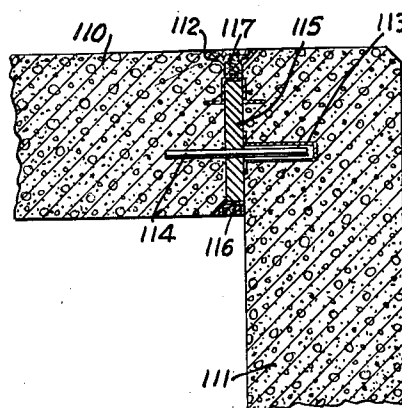
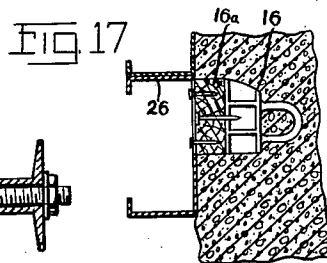
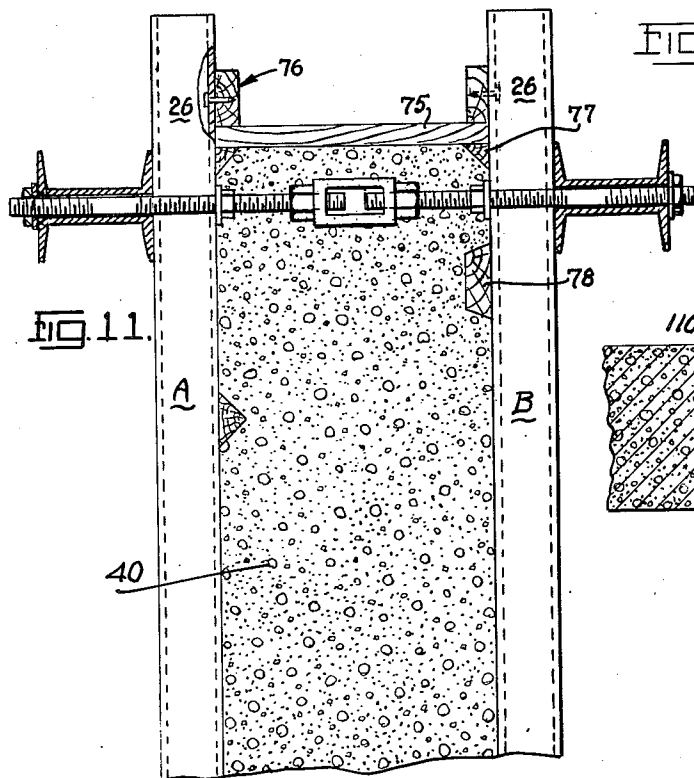
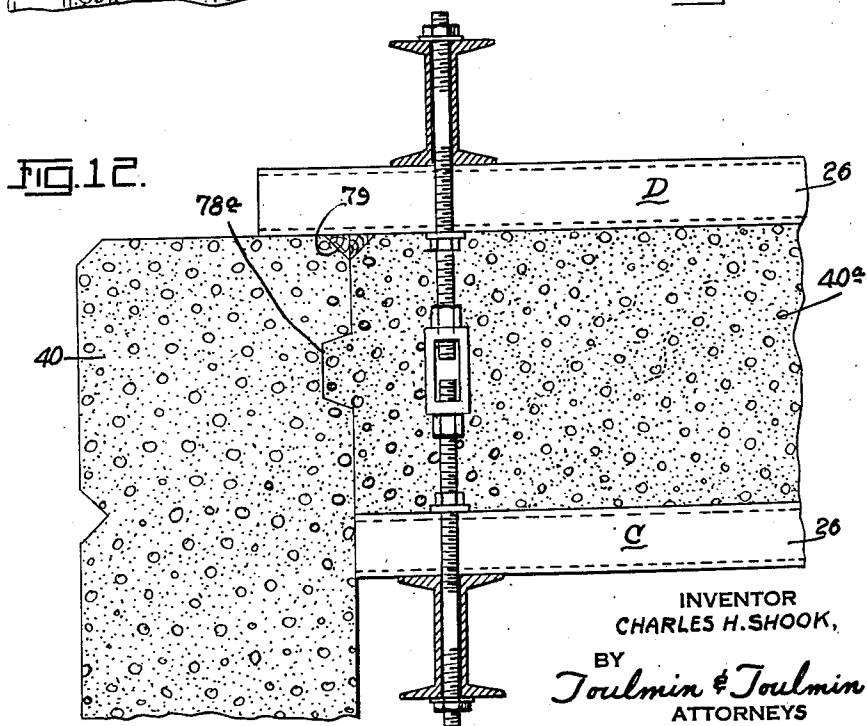


FIG. 13



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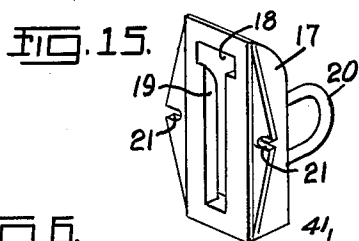


FIG. 6.

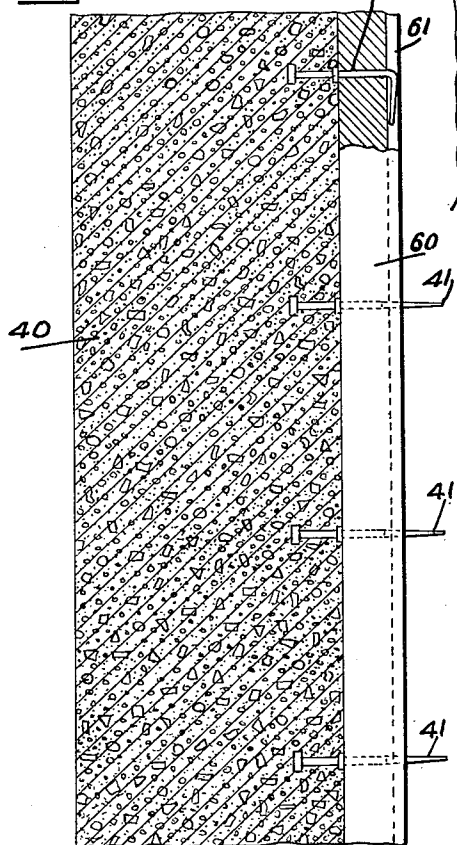


FIG. 10.

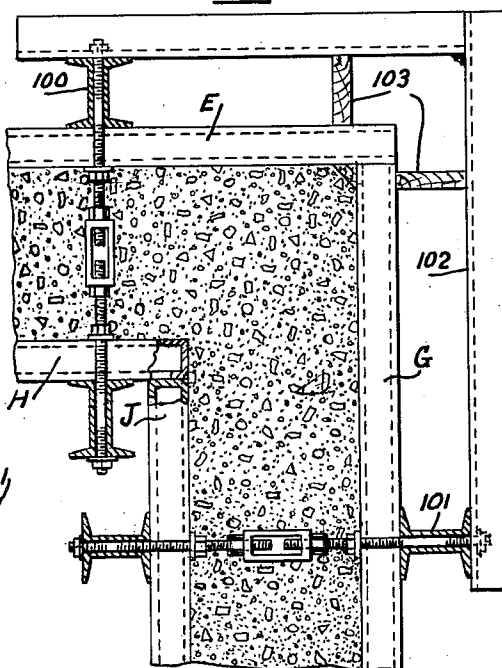


FIG. 7.

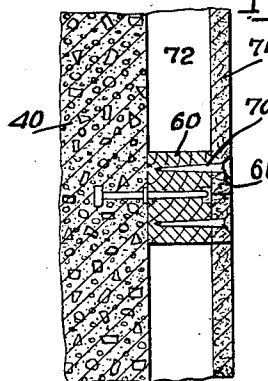


FIG. 16.

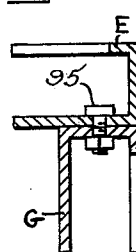
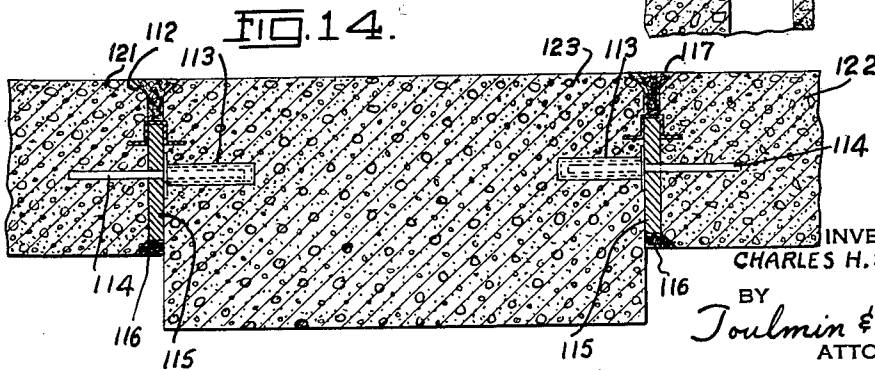


FIG. 14.



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FORM FOR MOLDING CONCRETE FOOTINGS
AND WALLS

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4 Claims. (Cl. 25—131)

1

This invention relates to an improved structural arrangement of forms for constructing footers and vertical walls of concrete.

It is common practice when erecting concrete structures to build wood forms to the desired size and shape. This specialized or custom building of forms is an expensive procedure and involves the use of numerous wall ties which extend through the wall and must be removed at least in part after the forms are removed. The wall ties make marks in the wall which must be patched. It is the purpose of this invention to eliminate the necessity for custom building of forms which must be dismantled after the concrete structure has set and to a large extent, waste the material used in the building forms.

It is an object of this invention to provide a structural arrangement of forms that can be assembled in most any desired relation to obtain the effect of custom building of forms but with standard units and particularly to eliminate the use of wall ties through the wall.

It is still another object of this invention to provide an improved structural arrangement of forms for producing concrete wall structures wherein means are provided for attaching furring strips to the concrete wall after the forms are removed.

Further objects and advantages of this invention will become apparent from the drawings and the following description.

In the drawings:

Figure 1 is a cross-sectional view of the forms arranged for producing a footer and a portion of the wall in which is contained inserts to which the upper part of the wall forms are fastened.

Figure 2 is a cross-sectional view of the forms arranged for producing a vertical wall section.

Figure 3 is a view, partially cross-sectional and partially elevational, showing a composite structure of both the footer forms and the vertical wall forms.

Figure 4 is a horizontal cross-sectional view taken along line 4—4 of Figure 3 showing the tie bar between opposite wall forms.

Figure 5 is a horizontal cross-sectional view taken along line 5—5 of Figure 3 illustrating the spacer block between the channel supports for the vertical wall form members.

Figure 6 is a vertical cross-sectional view through a vertical wall showing means of attaching a furring strip to the concrete wall.

Figure 7 is a horizontal cross-sectional view through a furring strip and wall section illustrating the manner of attaching an interior wall to the furring strip.

Figure 8 is a vertical cross-sectional view through a furring strip and a wall section illustrating further the means of attaching furring strip to the wall section.

2

Figure 9 is an elevational view of the pin for attaching the furring strip to a wall.

Figure 10 is a plan view of a form structure illustrating one manner of forming an integral corner of a vertical wall section.

Figure 11 is a plan view of the form structure illustrating the manner of closing the end between parallel form walls.

Figure 12 is a plan view illustrating the manner of attaching a vertical wall at right angles to the wall shown in Figure 11.

Figure 13 is a horizontal cross-sectional view through a corner section of vertical walls that are constructed separately and provided with an expansion joint between them.

Figure 14 is a horizontal cross-sectional view illustrating one manner of attaching wall sections to a pilaster and providing an expansion joint between the wall sections and the pilaster.

Figure 15 is a view of an insert member used in the footer, and walls to hold the lower end of channel studs.

Figure 16 is a horizontal cross-sectional view of a modified arrangement for holding together wall sections to form a corner.

Figure 17 is a cross-sectional view illustrating a manner of placing inserts in a wall section.

Referring to Figure 1, there is illustrated the form structure for providing a footer and a portion of a wall, it being understood that the footer and wall portion is poured and allowed to set before the remainder of the vertical wall is poured.

The footer forms are constructed in units of any desired length and they are adapted to be used in pairs in parallel relationship to provide an inverted T-shaped chamber in which the concrete can be poured to form a T-shaped footer and wall section as illustrated in Figure 1. The footer sections 10 illustrated in Figure 1 at the left and right-hand sides, are identical in construction, hence only one of the sections will be described.

The footer sections 10 each consist of a channel 11 that is provided with a plurality of holes along one edge thereof to receive the spikes or rods 12 which extend through holes and are adapted to be driven into the ground to hold the footer sections in spaced parallel relationship as illustrated in Figure 1.

A plurality of angles 13 are secured to the upper edge of channel 11 by any suitable means, such as the bolts 14. These angles 13 have secured to the end thereof that extends beyond the channel 11 a channel 15. Any suitable means may be provided for securing the angle 13 to the channel 15, such as the bolts 16a.

To set up a footer, the footer sections 10 are arranged in a spaced parallel relationship with any number of footer sections in end-to-end relationship and the rods or spikes 12 driven into the

3

ground to hold the footer form units in their desired position.

Before a concrete footer is poured, the inserts 16 are secured to the channel 15 by means of studs or screws or bolts to hold the inserts 16 in a predetermined position within the poured concrete footer. These inserts are provided for the purpose of holding bolts that are used in assembling the vertical wall sections hereinafter described.

The inserts 16 are more clearly shown in Figure 15. The inserts consist of a cast body 17 having a recess 18 therein, the face of which recess is closed by a T-shaped slot 19. A U-shaped loop 20 extends rearwardly from the body 17 of the insert 16 and is adapted to be imbedded in the concrete when the concrete surrounding it is poured, as illustrated in Figure 1. The notches 21 are provided in the insert 16 to receive the bolts or studs or screws that hold the inserts to the channel 15 while the concrete is being poured.

After the footer is poured, as shown in Figure 1, the channels 10 may be removed from the channel 15 upon removal of the bolt 16a and withdrawal of the spikes or rods 12 from the ground. The channel 15 may be used as a base in cooperation with the footer 25 upon which the vertical wall sections of the form are supported.

As illustrated in Figure 2, a plurality of channels 26 are set in edge-to-edge relationship upon the channel 15 to form a vertical form of the desired height. The channel sections 26 may all be of the same size or their heights may be varied to meet the circumstances. The channels 26 are thereby arranged, as shown in Figure 2, to form parallel form walls resting upon the channels 15.

Vertical studs 27 are positioned on the outside of the vertically arranged wall channels 26, each of the wall channels 26 being connected to the studs 27 by means of a hook 28 which prevents the wall channels 26 from moving inwardly.

Studs 27 are held against the channel 15 by means of bolts 29 extending outwardly of the channels 15. These bolts have the heads thereof placed within the T-shaped slot 19 of the inserts 16, and with the inserts 16 imbedded in the lower part of the footer and wall portion 25, the lower end of the wall form is prevented from outward movement relative to the footer. The upper ends of the studs 27 are connected with a tie bar 30 having a turnbuckle connection 31 which adjusts the upper ends of the bars 27 relative to one another. The studs 27 are spaced along the length of the vertical wall form at regular intervals to tie the ends together periodically and supports the channels 26.

To provide for furring strips along the vertical concrete wall 40 a plurality of pins 41 are inserted through holes in the channels 26 before the concrete wall 40 is poured.

These pins are more particularly shown in Figure 9 and consists of an elongated body 42 having a head 43 on one end thereof that is adapted to carry into the concrete wall. A protrusion is provided on the body 42 to prevent the pin from moving outwardly through the hole and the channels 26 when the concrete is poured. A groove 45 is provided around the pin body 42 and is adapted to receive a hair-pin tie member 46, see Figure 2, which prevents the pin 41 from moving inwardly into the wall form before the concrete is poured.

With the wall forms arranged as shown in

4

Figure 2 and with the pins 41 in place, the concrete wall 40 can be poured.

The vertical support studs 27, as shown in Figure 2, can be channel iron or wood beams, as desired. When the concrete wall has set, it will be apparent that the form structure can be disassembled and used on another job. The inserts 16 will, however, remain in the concrete 25, these being the only expendable parts.

In case a high wall is built, additional inserts 16 can be attached to the channel sections 26 as illustrated in Figure 17. A wood block 16a may be placed between the insert 16 and the channel 26. The wood block 16a can be removed after the wall is set so that the insert can be used to secure channel sections against the wall upon which other channel sections can be supported. After completion of use of the inserts 16, the holes left by removal of the wood blocks can be patched in the usual way.

In Figure 3 there is illustrated a modified arrangement of the vertical support bars that retain the channel form sections 26 in their relative positions. In this arrangement those parts which are identical with those heretofore described are provided with the same numbers and therefore perform the same functions. However, in the illustration shown in Figure 3 the studs or supports 27 are here composed of a pair of channels 50 that are positioned in a back-to-back relationship and are held in spaced relationship by means of spacers 51 and the bolt 52, see Figure 5. The spaced relationship of the channels 50 is such as to allow the bolts 29 at the bottom part of the forms to extend between the channels 50 and at the upper end allow the tie bar 30 to extend between the channels.

The channels 26, or some of them, are provided with clamps 120 adapted to engage one of the channels 50 for preventing moving of the wall channels inwardly of the form.

In other respects the structure illustrated in Figure 3 is identical with that illustrated in Figures 1 and 2.

In Figures 6 and 8 there is illustrated the manner of attaching furring strips to the concrete wall after the forms are disassembled. It will be understood that when the forms are disassembled, the hair-pins 46 are removed from the pins 41 to allow removal of the channels 26 from off the pins 41.

A furring strip 60 is provided with a groove 61 extending longitudinally thereof in one face and is positioned substantially midway between the longitudinal edges of the strip. A plurality of holes extend through the furring strip in alignment with the groove 61 which are adapted to receive the extending ends of the pins 41, as viewed in Figure 6. After furring strips are placed on pins 41, the ends of the pins are bent to lay in the groove 61 and thereby clinch the furring strip to the wall 40.

The furring strips 60 are then used as the means into which nails or screws 70 can be driven to attach decorative wall sections 71 which may be lath and plaster or other suitable material to the furring strips and also provide a space 72 between the outer wall 40 and the inner decorative wall 71.

In Figure 11 there is illustrated a structure for closing an end of a vertical wall section to another which may be constructed at right angles to that illustrated in Figure 11, the complete corner wall section being illustrated in Figure 12. In making the corner wall section illustrated in

5

Fig. 12, the wall section in Figure 11 is first made and then the right angular wall attached thereto as shown in Figure 12.

To provide for closing the end of the wall section between the parallel wall forms A and B, the end wall 75 is positioned between the adjacent faces of the channel sections 26 that form the wall sections A and B. Blocks 76 are nailed or screwed to the channel sections 26 to prevent the wall 75 from moving outwardly. Angle blocks 77 are placed along opposite edges of the wall 75 to provide a chamfer on the corners of the vertical wall 40. A wedge-shaped key block 78 is positioned along one face of the wall section B to form a wedge-shaped groove in the wall 40 when the block 78 is removed.

After the wall section is poured between the forms as arranged in Figure 11 the channel sections 26 can then be arranged to form parallel form walls C and D as shown in Figure 12 with the form wall C abutting on the face of the wall 40 and the wall sections D overlapping one edge of the wall sections 40. When the wall section 40a is poured, the recess 72a formed in the wall section 40 will be filled by the concrete poured in the wall 40a and thereby form a key between the two walls.

In Figure 10 there is illustrated a form structure for pouring a corner as an integral unit. In this arrangement the channel sections forming the outer wall E are abutted with the channel sections forming the outer wall G and the channel sections H forming the near wall of the form abutted with the channel sections J at right angles thereto. Spacer blocks 103 are placed between the right angle structure 102 and the corner channel forming the corners of the walls E and G to hold these channels in positive engagement.

With the wall sections assembled as shown in Figure 10, the corner can be formed as an integral structure.

In Figure 16 there is illustrated a modified construction for holding corner sections together. In this arrangement a bolt 95 extends between the channel sections E and G.

In Figure 13 there is illustrated an arrangement forming the walls 110 and 111 by separate units connected by an expansion joint 112. In this arrangement the wall section 111 may be first poured and then by using the corner sections in Figure 10 together with other channel sections forming the other portions of the wall, the wall section 110 may be then poured. However, to provide for the expansion joint 112 between walls 110 and 111 the female dowels 113 are keyed in the wall section at the time it is poured to later receive the male dowels 114 which key the expansion member 115. Suitable keyways can be provided on the inside face of the wall sections to provide for grooves 116 and 117 to receive a caulking compound when the forms are disassembled.

In Figure 14 there is illustrated a manner of assembling wall sections 121 and 122 against a pilaster 123 using the expansion joint assembly illustrated in Figure 13.

While a preferred form of this invention is illustrated, yet it will be understood that modifications that fall within the scope of the appended claims are intended to be included herein.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

6

1. A form for concrete walls comprising an inverted T-shaped footer providing a vertical wall portion and a horizontal ledge extending from each side thereof, anchor members embedded in said vertical wall portion of said footer at each side thereof, a channel shaped wall section placed at each side of said wall portion and resting on said ledge with the open side of the channel positioned outwardly of said wall portion, a vertically disposed support member positioned against each of said wall sections and having the bottom end resting on the respective ledge, detachable fastening means extending from the respective support members through the wall section thereagainst and into detachable connection with the respective anchor members, a plurality of channel shaped wall sections positioned upon said first mentioned wall sections with the open side of the channel toward the respective vertical support members, detachable fastening means between said vertical support members and said last-mentioned wall sections, and a tie member extending between the upper ends of said support members above the uppermost of said wall sections.

2. A form for concrete walls comprising an inverted T-shaped footer providing a vertical wall portion and a horizontal ledge extending from each side thereof, anchor members comprising a body having an anchor key projecting from one side thereof and having a T-shaped slot therein, said anchor members being embedded in said vertical wall portion of said footer at each side thereof with the T-shaped slot exposed on the face of said vertical wall portion, a channel shaped wall section placed at each side of said wall section and resting on said ledge with the open side of the channel positioned outwardly of said wall portion, a vertically disposed support member positioned against each of said wall sections and having the bottom end resting on the respective ledge, detachable fastening bolts extending from the respective support members through the wall section thereagainst with the bolt heads in detachable connection with the T-shaped slots of the respective anchor members, a plurality of channel shaped wall sections positioned upon said first mentioned wall sections with the open side of the channel toward the respective vertical support members, detachable fastening means between said vertical support members and said last-mentioned wall sections, and a tie member extending between the upper ends of said support members above the uppermost of said wall sections.

3. A form for producing a footer and a vertical wall portion thereon comprising, spaced parallel wall units forming an inverted T-shaped space therebetween, each of said wall units including a channel shaped wall section having the open side thereof directed horizontally, said wall section having vertically aligned openings through the opposite sides of the channel to receive anchor pins adapted to be driven into the ground to hold the wall section on the ground, a second channel shaped wall section positioned adjacent the closed side of the first-mentioned wall section above the same and in spaced parallel relation thereto with the open side thereof disposed in the same direction as that of the first wall section, a horizontal platform extending between the top of said first wall section and the bottom of said second wall section, bar means between said channel sections above said platform and including fastening means remov-

7

ably connecting the same to said channel means, said wall sections forming an offset form section, a plurality of channel shaped wall sections disposed horizontally and arranged vertically in edge-to-edge relationship on top of said second wall section with the open sides of said last-mentioned wall sections disposed in the same direction as that of said second wall section, vertically disposed support members against which said second and said last-mentioned wall sections are positioned, said support members resting on said platform, attaching devices individually and detachably connecting said wall sections to said support member, and a tie member extending between upper ends of the support members above the uppermost of said wall sections to hold together said wall units.

4. A form for producing a footer and a vertical wall portion thereon comprising, spaced parallel wall units forming an inverted T-shaped space therebetween, each of said wall units including a channel shaped wall section having the open side thereof directed horizontally, said wall section having vertically aligned openings through the opposite sides of the channel to receive anchor pins adapted to be driven into the ground to hold the wall section on the ground, a second channel shaped wall section positioned adjacent the closed side of the first mentioned wall section above the same and in spaced parallel relation thereto with the open side thereof

8

disposed in the same direction as that of the first wall section, a horizontal platform extending between the top of said first wall section and the bottom of said second wall section, and bar means between said channel sections above said platform and including fastening means removably connecting the same to said channel means, said wall sections forming an offset form section.

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