July 18, 1944. C. E. WIRE 2,353,981

FOUNDATION WALL MOLD

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Fig. 1.

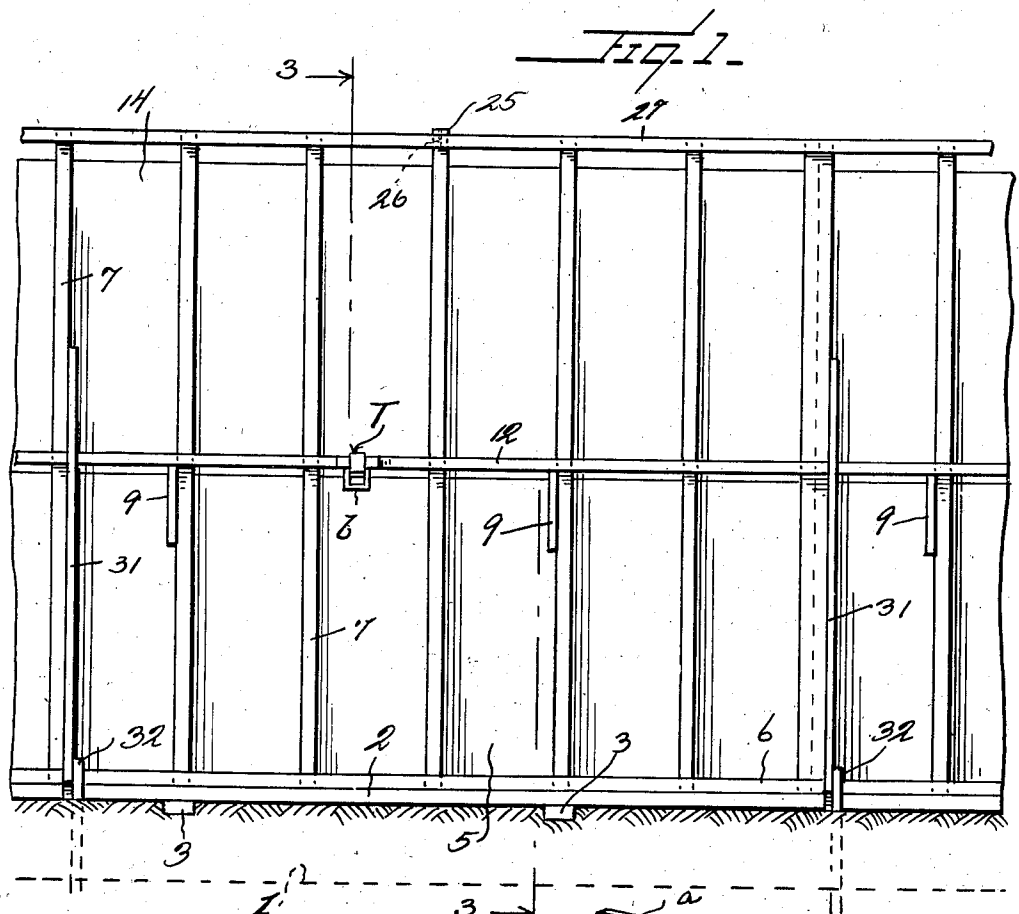
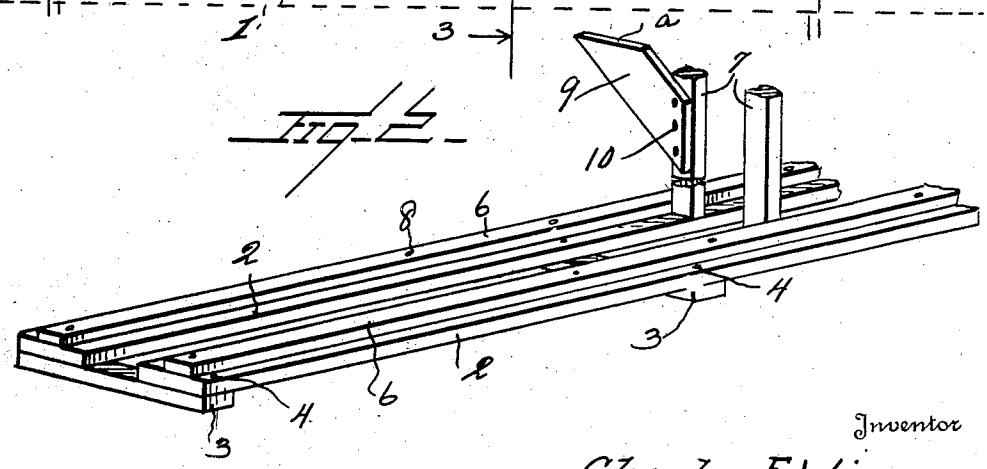


Fig. 2.



Inventor

Charles E. Wire

By Coleman & Larson

Attorneys

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Fig. 4.

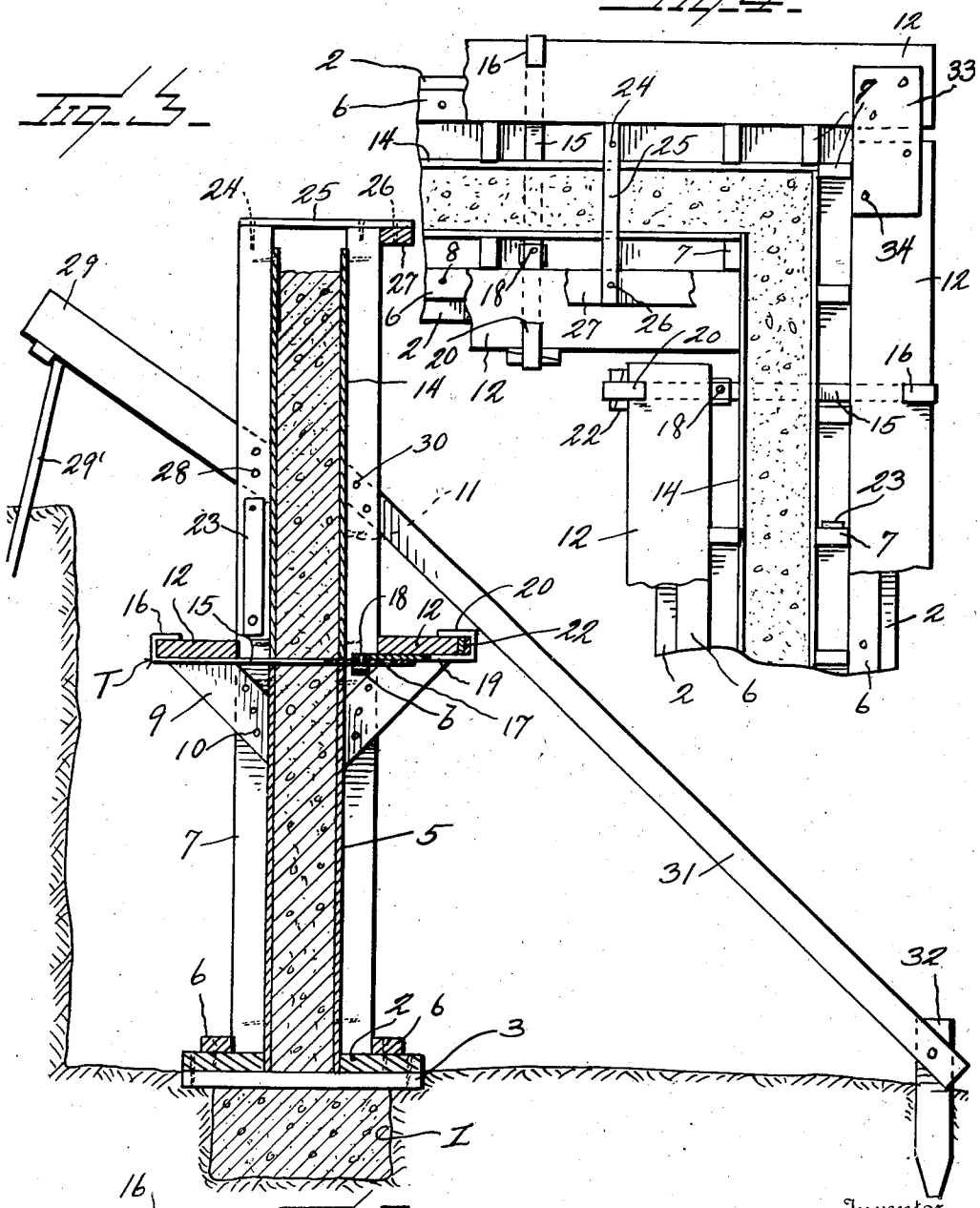
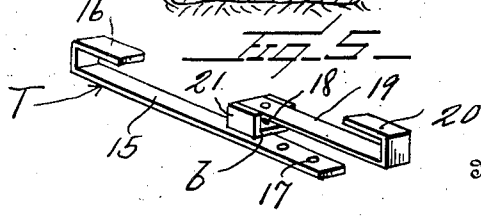


Fig. 5.



Charles E. Wire

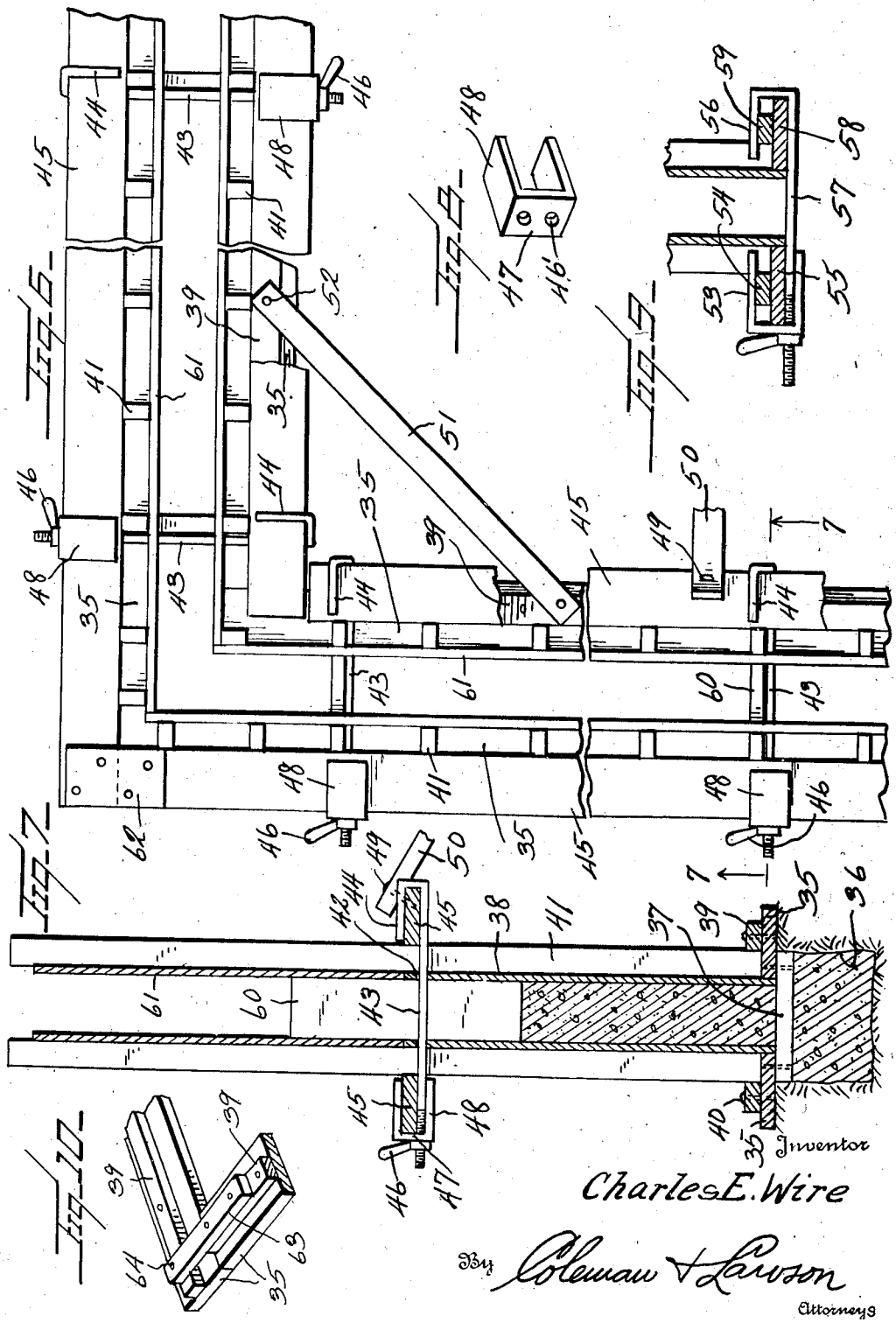
By Coleman & Lawson

Attorneys

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FOUNDATION WALL MOLD

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Inventor
Charles E. Wire
By Coleman & Lawson
Attorneys

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2,353,981

FOUNDATION WALL MOLD

Charles E. Wire, Washington, D. C.

Application September 22, 1942, Serial No. 459,296

2 Claims. (Cl. 25—131)

This invention relates to a means of forming foundation walls, and it is a particular object of the invention to provide a means and method whereby such walls may be made economically both in labor and material.

Another object of the invention is to provide a means of making foundation walls wherein can be readily used joists and studs usually available at building operations and wherein the use of such material can be had without mutilating or spoiling the same.

The invention has for a still further object to provide a means of building a wall wherein the footing and wall proper are integral.

It is a particular object of the invention to provide a means of molding concrete or cementitious walls wherein it is possible to employ sheetings of plywood or other relatively light material and without requiring any preliminary preparation or forming of such sheetings.

A still further object of the invention is to provide a means of forming a concrete or cementitious wall wherein light sheetings can be used and wherein such sheetings are effectively maintained in required assembly to effectively withstand distortion of such sheetings by the weight of the poured concrete or cementitious material and wherein said sheetings are supported in assembled relation in a manner to readily permit the same to be removed after the wall has sufficiently set.

An additional object of the invention is to provide a means for producing a concrete or cementitious wall wherein is eliminated the necessity of employing any especially preformed elements to produce a corner in the wall.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved means of forming foundation walls whereby certain important advantages are attained, as will be hereinafter more fully set forth.

In order that my invention may be better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a view in elevation illustrating in fragment a portion of the mold assembled in accordance with an embodiment of the invention.

Figure 2 is a fragmentary view in perspective illustrating the assembly of the mold structure at the base portion or footing of the wall.

Figure 3 is a vertical sectional view taken substantially on the line 3—3 of Figure 1.

Figure 4 is a view in top plan showing the means and method of molding a corner portion of the wall.

Figure 5 is a view in perspective of one of the tie members, the parts of said member being separated.

Figure 6 is a view in top plan of a mold constructed in accordance with another embodiment of the invention.

Figure 7 is a vertical sectional view taken substantially on the line 7—7 of Figure 6.

Figure 8 is a view in perspective of one of the members of a clamp unapplied.

Figure 9 is a fragmentary vertical sectional view showing a removable clamp associated with the bottom portion of the mold.

Figure 10 is a fragmentary view in perspective showing the connection between the bottom joists and a corner.

In carrying out my method and means of forming foundation walls for building structures, a suitable trench 1 is dug, said trench being of required dimensions and laid out as desired. Conventional joists 2, such as the usual 2 x 10 joists, are laid on the ground surface along opposite sides of the trench 1 with the inner longitudinal marginal portions of the joists 2 overlying the top of the trench 1 with, of course, the opposed edges of such joists spaced apart in accordance with the desired thickness of the wall to be poured.

These joists 2 at predetermined points thereabout are tied or connected by the transversely disposed cleats 3 nailed, as at 4, or otherwise secured to the joists 2, whereby said joists are maintained in desired spaced relation. In referring to joists 2, it is to be stated that I have in mind any flat elongated piece of lumber or other material of requisite width and thickness.

These strips or cleats 3 also provide supports for the sheetings 5 of plywood or other relatively light material and which sheetings rest from above upon the strips or cleats 3 and have their lower marginal portions in close contact with the opposed longitudinal edge faces of the joists 2.

The joists 2 have disposed thereon and extending lengthwise thereof timbers 6, such as conventional studding, the inner edge face of each of which is parallel to the inner edge face of the joist 2 upon which it is mounted. The inner face of the applied timber 6 is spaced from the inner edge of the joist 2 a distance equal to one dimension of a stud 7 which constitutes one of the uprights or columns employed in the assembly of the mold.

These studs are generally 2 x 4 and the inner

edge face of a timber 6 is preferably spaced from the inner edge face of its joist 2 a distance substantially equal to the larger dimension of the stud 7, so that the lower end of the stud 7 may be mounted on a joist 2 with the inner vertical edge face of the stud 7 substantially flush with the inner edge face of the joist 2 upon which said stud 7 is rested in the assembly of the mold. Each of the studs 6 is nailed, as at 8, or otherwise held to its joist 2.

Certain of the studs 7 at a predetermined distance above the lower ends thereof are provided with the outwardly and upwardly disposed brackets 9 which may be of wood or any material preferred and which are rigidly secured, as at 10, to said brackets. In practice, it has been found unnecessary to have these brackets 9 applied to all of the studs 7 although, of course, if desired this could be done. The upper and outer free end edge *a* of each of the brackets 9 is straight and substantially at right angles to the stud 7 to which said bracket is secured.

As the sheets 5 are applied in working position, they are preferably held against the studs 7 by the nails 11 or otherwise as may be preferred, it being stated, however, that such attachment must be one to allow the ready separation of the sheet 5 from the stud or studs to which it is attached when the mold structure is being disassembled. Each of the brackets 9 is of such dimensions as to have its straight edge *a* outwardly of its associated stud 7.

The brackets 9 are adapted to have rested on their straight edges *a* the conventional 2 x 10 joists 12 and which joists serve to provide a footway and also to provide means for holding the stud 7 against outward movement during the pouring of the wall in a manner to be hereinafter explained.

It is also to be pointed out that the straight edge *a* of each of the brackets 9 is so positioned on its stud 7 with respect to the lower end of said stud to bring the straight edge *a* of the bracket substantially flush with the upper edge of an applied sheet, so that the tie member T for holding the joists 12 in place may be readily applied without requiring any mutilation of the sheets 5 therebelow and also to readily permit the desired application of the upper sheets 14 of plywood or kindred material without necessitating any cutting or other mutilation of said sheets 14.

The tie T, as herein disclosed, comprises two separable members, one of which includes an elongated strap 15 formed at one end to provide an inwardly facing hook member 16 which is adapted to engage over the outer longitudinal marginal portion of a joist 12 to one side of the assembled mold while the strap 15 is of a length to bridge the space between the applied sheetings 5 and to extend below the joist 12 at the opposite side of the assembled mold.

The free end portion of the strap 15, or that portion which extends below the second joist 12, is provided with the longitudinally spaced openings 17 in which is adapted to be selectively received a pin 18 depending from the inner end portion of a second strap 19 comprised in the tie T. This strap 19 is of a length considerably less than the length of the strap 15 and the outer end portion of this strap 19 is also provided with an inwardly facing hook member 20 which engages over the outer marginal portion of the second joist 12.

The inner end portion of the strap 19, or that portion provided with the pin 18, is also provided with the depending rigid loop member 21 through which the free end portion of the strap 15 may be readily threaded and, as illustrated in Figure 1, it is to be noted that the pin 18 terminates a sufficient distance above the cross member *b* of the loop member 21 to allow the desired passage of the free end portion of the strap 15 through said loop.

The pin 18 is selectively engaged in an opening 17 in accordance with the thickness of the wall to be formed and, after the tie has been initially assembled, wedges 22 are forced between the outer longitudinal marginal portion of the joist 12 with which the strap 19 of the tie member is engaged and the inner or closed end of the hook member 20. These wedges 22 serve to assure the joists 12 at both sides of the mold being brought tightly against the studs 7 to assure the maintenance of said studs 7 in required assembly.

These tie members T are only required to be applied at materially spaced intervals along the mold structure and it is to be pointed out that the particular mounting of these joists 12 permit the joists to cooperate with a plurality of studs 7 and in a manner eliminating the necessity of directly connecting the joists 12 to the studs 7 by nails or the like.

It is also believed to be obvious that the tie T is of a type that can be readily applied and can with equal facility be removed. In removal, it is only necessary to knock out the wedges 22, whereupon the joists 12 associated with the strap 19 can be readily raised sufficiently to separate the strap 9 from the strap 15 and said part of the tie removed.

In operation, after the mold has been properly assembled with respect to the trench 1, the concrete or cementitious material is poured down beneath the initially set sheetings 5 into the trench 1 to form the footing. After the footing has set for a short period of time, further concrete or cementitious material is poured between the sheetings 5 to substantially the top thereof. After the material between the sheetings 5 has sufficiently set, the sheetings 14 are placed in position and the concrete or cementitious material poured therebetween to complete the formation of the upper portion of the wall.

In forming the lower portion of the wall, it is found desirable to connect transversely opposed studs 7 with a cross cleat 23, whereby the upper portions of opposed studs are effectively held against inward movement and maintained in desired vertical position. In Figure 3 of the drawings, the cleat 23 is shown in full lines in an inoperative position but the operative position of this cleat 23 is indicated in said figure by broken lines. It is to be noted that this cleat 23 is located above the lower sheetings 5 so as to offer no hindrance or obstruction to the desired application of the sheetings 5. After the spaces between the sheetings 5 have been properly filled, each of these cleats 23 is entirely removed or swung out of the way, as illustrated by full lines in Figure 3.

It is also desirable to tie the upper ends of transversely aligned studs. As disclosed in the accompanying drawings, the upper ends of each pair of transversely aligned studs 7 have nailed thereto, as at 24, a cross cleat 25. Each of these cleats 25, however, is of a length to extend beyond one of the studs 7 so that it can be attached,

as at 26, to a stud 27. This stud 27 is adapted to contact from without with the upper end portions of a plurality of the studs 7 so that it is not required to have a cleat 25 associated with each pair of transversely aligned studs 7 but to have said cleats arranged at materially spaced points along the mold.

For maintaining the assembled mold in position, certain of the studs 7 at the bank side of the mold structure each has secured thereto, as at 28, an outwardly directed brace member 29 operatively engaged with a suitably positioned peg 29' or the like on the ground surface. Certain of the studs 7 at the inner side of the mold structure have secured thereto, as at 30, an end of a brace member 31 which is also anchored to a peg 32 driven into the cellar surface. It is apparent, however, that the mold structure may be held or braced in assembled position by any means which may be employed to advantage, as such holding or bracing feature forms no particular part of the invention.

As illustrated in Figure 4 of the drawings, it will be noted that in forming a corner in the wall structure, no special parts are required but, on the contrary, it is only necessary that at the inner side of the wall structure a stud 7 be in close contact with the adjacent ends of the sheetings 14 or 5, with one of said sheetings overlying or overlapping the adjacent ends of the angularly related sheeting. In connection with the sheetings 14 or 5 at the bank side of the mold, it is only required that one of the studs 7 have direct contact with the adjacent ends of the angularly related sheetings and that a second stud have contact with the angularly related sheetings at a point immediately adjacent to the butting portions of the angularly related sheetings.

It is to be stated that, if preferred, ties T can be employed in connection with the joists 2 instead of the cleats 3, as hereinbefore referred to. This, however, is an obvious substitution and it is not believed necessary that such use of the tie T be illustrated.

In the corner assembly of the mold, the adjacent extremities of the joists 12, as illustrated in Figure 4, are preferably tied or connected by a short block or strip 33 nailed, as at 34, or otherwise anchored in place. Such securement often is also desirable at the end portions of adjacent joists 2. While this is not illustrated in the accompanying drawings, it is believed to be readily apparent.

In the embodiment of the invention as illustrated in Figures 6 to 10, the joists 35 are laid on the ground surface alongside of the trench 36 with the inner longitudinal marginal portions of the joists 35 overlying the top of the trench 36. These joists 35 are initially maintained in desired spaced assembly by suitably disposed cleats nailed to the under surface of the inner marginal portions of the joists 35, one of said cleats 37 being illustrated in Figure 7. These cleats 37 provide supports for the bottom sheetings 38 of plywood or other relatively light material, said sheetings 38 being so supported to have their lower marginal portions in close contact with the opposed longitudinal edge faces of the joists 35.

The joists 35 have disposed thereon and extending lengthwise thereof the timbers 39 temporarily held on the joists 35 by the nails 40. The inner edge face of each of these timbers 39 is parallel to the inner edge of the joist 35 upon which it is mounted and the inner face of the applied member or stud 39 is spaced from the inner edge of the joist 35 a distance equal to one dimension of a stud 41 which constitutes one of the uprights or columns employed in the assembly of the mold. When these studs 41 are in applied position, the inner vertical edge thereof is substantially flush with the inner edge of the joist 35 upon which said stud 41 is rested.

The sheetings 38 at substantially the longitudinal center thereof and closely adjacent to the upper marginal portions thereof are provided with the openings 42, the opening 42 of a sheeting at one side of the mold being substantially aligned with the opening 42 in the sheeting at the opposite side of the mold, so that the elongated shank 43 of a clamp member may be readily threaded therethrough. One end portion of this clamp member 43 is formed to provide an inwardly facing hook member 44 which is adapted to engage over the outer longitudinal marginal portion of a top joist or elongated member 45 common to the adjacent studs 41 at one side of the mold to provide means for maintaining said studs in desired vertical position.

The opposite or free end portion of the elongated shank 43 is freely disposed through a suitably positioned opening 46' in the base portion 47 of a U-shaped bracket member 48 which straddles the outer longitudinal marginal portion of a top joist or bracing member 45 at the opposite side of the mold and having direct contact with the adjacent studs 41. The shank 43 has threading thereon a conventional speed nut 46 for contact with the outer face of the base portion 47 of the bracket member 48, whereby both of the joists or elongated members 45 will be tightly held against the studs 41 at opposite sides of the mold. By having the shank 43 passing through the openings 42 of the sheetings 38, the clamp also provides means for effectively maintaining the bottom sheetings 38 in desired position. These upper joists or elongated members 44 also serve to provide footways to facilitate the proper pouring of the cementitious material between the lower sheetings 38.

It is to be stated that, if deemed necessary, blocks may be nailed to certain of the vertically applied studs 41 in position for contact from below with the upper joists or elongated members 45 to further support the same against the weight of persons using the joists or members 45 for footways. However, as this is an obvious expedient, an illustration of the same is not believed necessary.

The applied upper joists or members 45 may have secured directly thereto, as indicated at 49 in Figure 7, an end portion of a suitable brace 50. The adjacent end portions of the bottom joists 35 at a corner at the inner side of the mold are adapted to be connected by a holding strip or stud 51, as illustrated in Figure 6, the same being readily anchored by use of the usual nails 52. As illustrated in Figure 6 of the drawings, the extremities of this member or stud 51 overlie the elongated timbers 39 mounted upon the joists 35.

It may be desired to employ in connection with a bottom joist 35 a series of clamp members of a character similar to the one hereinbefore described for use in connection with the upper joists or members 45. Such use is particularly illustrated in Figure 9 of the drawings and wherein the structure of the clamp is the same as the former one except that the bracket 53 is of such a size to readily straddle the outer mar-

ginal portion of an applied stud **54** and its associated joist **55** while the inwardly facing hook member **56** of the shank **57** is of such dimensions as to readily straddle the joist **58** and the stud **59** thereon at the opposite side of the mold.

At desired points therealong the bottom sheetings **38** have snugly interposed between the upper marginal portions thereof the lower extremities of the elongated members **60** of such width to assure the upper marginal portions of the sheetings **38** being maintained against inward movement. Each of these applied members **60**, as illustrated in Figure 7 of the drawings, is of a length to extend only a slight distance down below the upper margins of the applied sheetings **38** and also to extend a desired distance thereabove, with the side edges *a* of said applied members **60** substantially parallel with the inner edge faces of the applied studs **48**. The upper portions of said side edges *a* are spaced from the adjacent portions of the edge faces of the studs **41** a distance substantially equal to the thickness of the upper sheetings **61** which can be readily dropped or slid from above into applied position to rest upon the upper marginal portions of the lower or bottom sheetings **38**. No means in addition to the members **60** is required for holding the upper sheetings **61** in working position. It is believed to be obvious that the upper or top sheetings **61** are not applied until the cementitious material has been poured as desired within the lower portion of the mold and during the pouring operation for the upper portion of the mold, these members **60** can be readily removed.

In this embodiment of the invention, the top joists **45** at the corner portion of the mold are also connected by a short strip or member **62** and, as illustrated in Figure 10, the lower joists **35** at the corner of the mold are connected by a strip **63**, the extremities of which rest upon the top faces of the studs **39** and are temporarily anchored thereto, as at **64**, by nails or otherwise as may be preferred.

From the foregoing description it is thought to be obvious that a means and method of forming foundation walls constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated.

What I claim is:

1. A mold for pouring a foundation wall for a building comprising, in combination, joists positioned lengthwise along the ground surface, means for maintaining means in spaced relation, said joists inwardly of the inner longitudinal margins of the joists providing longitudinal shoulders, studs freely placed in a vertical position upon the joists flush with the inner longitudinal margins of the joists, with the lower extremities of the studs abutting said shoulders, brackets comprising lengths of construction material secured to certain of the studs and extending outwardly when the studs are applied, each bracket having a horizontal top end additional joists supported upon said top ends of the brackets and bearing against a plurality of studs to further hold the studs in effective position, said additional joists being disposed outwardly of the studs to serve as footways, tie members engaged with the last joists at opposite sides for holding the last joists in effective position, and sheetings contacting the inner opposed faces of the studs and between which the wall material is to be poured.

2. A mold for pouring a foundation wall for a building comprising, in combination with a footing trench, relatively wide joists positioned on the ground lengthwise, of each side of the trench and each projecting a substantial distance over the open top of the trench, means for maintaining timbers in the form of studding disposed longitudinally upon and in spaced relation, said joists inwardly of the inner longitudinal margins of said joists providing shoulders, studs freely placed in a vertical position upon the joists adjacent to the inner longitudinal marginal portions of the joists, with the lower extremities of the studs in contact with the said shoulders, additional joists engaging against a plurality of studs at a predetermined distance above the first joists, means common to the additional joists for holding the same tightly against the studs, sheetings contacting the inner opposed faces of the studs and between which the wall material is to be poured, said sheetings resting upon the said means for maintaining the first joists in spaced relation, and a member interposed between the upper portions of the sheetings to hold said sheetings against inward movement away from the studs, said member extending above the sheetings, with the extended portion coacting with certain of the studs to provide spaces to slidably receive upper sheetings to hold the same superimposed upon the lower sheetings.

CHARLES E. WIRE.