May 28, 1968 F. G. PAULI, JR 3,385,556

CORNER CLAMP CONSTRUCTION FOR WALL FORMS

Filed May 27, 1966 2 Sheets-Sheet 1

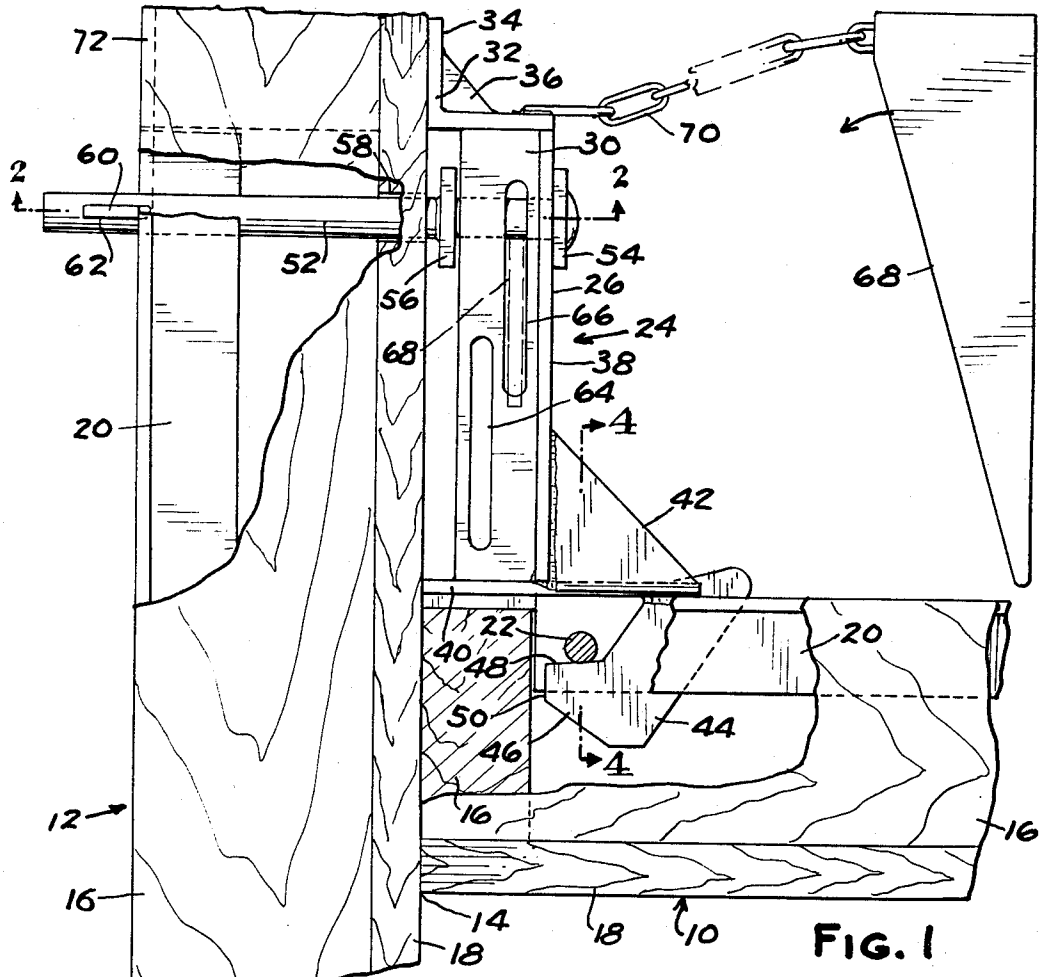



FIG. 1

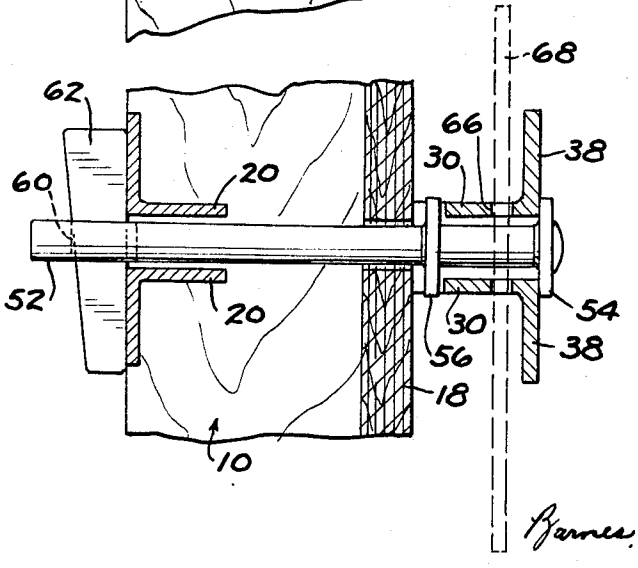



FIG. 2

INVENTOR.
FRANK G. PAULI, JR.
BY
Barnes, Kisselle, Raisch & Choate
ATTORNEYS

May 28, 1968 F. G. PAULI, JR 3,385,556

CORNER CLAMP CONSTRUCTION FOR WALL FORMS

Filed May 27, 1966 2 Sheets-Sheet 2

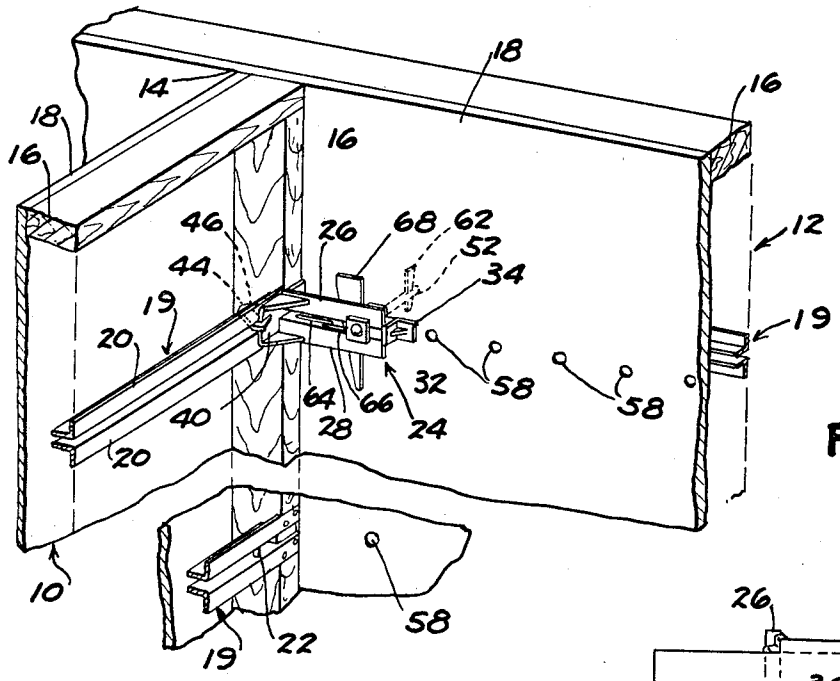



FIG. 3

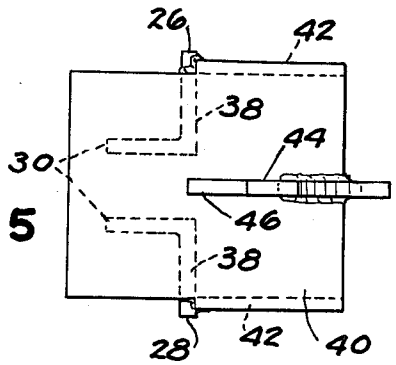



FIG. 5

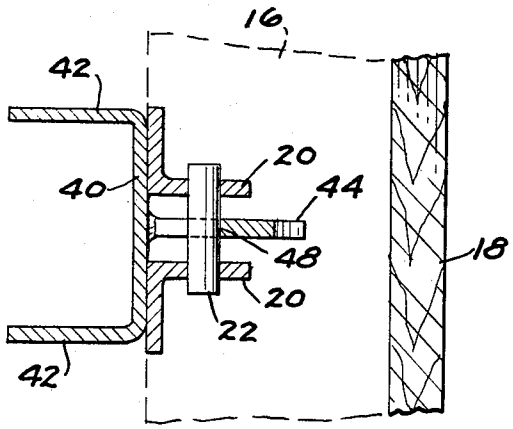



FIG. 4

INVENTOR.
FRANK G. PAULI, JR.

BY

Barnes, Kisselle, Raisch & Choate
ATTORNEYS

United States Patent Office 3,385,556 Patented May 28, 1968



3,385,556

# CORNER CLAMP CONSTRUCTION FOR WALL FORMS

Frank G. Pauli, Jr., Northville, Mich., assignor to Kwik Lock Form Co., Northville, Mich., a corporation of Michigan

Filed May 27, 1966, Ser. No. 553,524
7 Claims. (Cl. 249—194)

This invention relates to wall forms of the type conventionally used for pouring concrete walls and, more particularly, to a clamp arrangement for securing such wall forms together where they meet to form an outside corner for the wall to be poured.

Wall panels of the type described are usually constructed of uniform height and a plurality of lengths and widths; however, it frequently happens that the wall to be poured has a length which does not coincide exactly with the length of a plurality of such panels arranged end to end. As a consequence, the two end panels defining the two faces of the outer corner of the wall must be perpendicularly arranged with one panel extending outwardly beyond the intersection of the two panels. This presents the problem of securing the panels together so that they can be easily connected in rigidly fixed relation and at the same time easily dismantled.

Accordingly, it is an object of this invention to provide a corner clamp arrangement which enables two perpendicularly related wall forming panels to be easily connected in fixed relation when the panels are arranged such that one panel extends outwardly beyond the other panel.

Other features and objects of the invention will become apparent from the following description taken in conjunction with the accompanying drawings in which:

FIGURE 1 is a fragmentary top view partly in section of a pair of wall forming panels secured together with the clamp of the present invention.

FIGURE 2 is a sectional view taken along the line 2—2 in FIG. 1.

FIGURE 3 is a fragmentary perspective view of the wall forming panels and clamp arrangement shown in FIG. 1.

FIGURE 4 is a sectional view taken along the line 4—4 in FIG. 1.

FIGURE 5 is an end view of the clamp.

Referring to the drawings, two wall panels **10** and **12** are illustrated arranged in perpendicular relation to one another in an upright position so that the intersection thereof, generally indicated by numeral **14**, is adapted to form the outside corner of two intersecting walls of a building structure. Panels **10** and **12** are similarly constructed and generally consist of wood 2 x 4's **16** which define rectangular frames faced on the inner side thereof with plywood panels **18**. The completed wall form would also include similar panels spaced inwardly from panels **10** and **12** so that the wall is formed by pouring concrete between the inner and outer wall panels.

Panels **10** and **12** additionally incorporate horizontally extending walers **19** which are in the form of a pair of structural angles **20** secured to the vertically extending frame members **16** in spaced apart relation and also interconnected by steel pins **22**. Pins **22** are preferably spaced horizontally along the walers **19** and there is preferably provided a waler pin **22** adjacent each end of the walers. Each panel is preferably provided with at least two horizontally extending and vertically spaced walers **19**. In the arrangement illustrated, the end panel **12** abuts against the plywood facing **18** of panel **10** intermediate the ends of the panel. As a consequence, panel **10** extends outwardly beyond the intersection of panels **10** and **12**.

The clamp of the present invention is designated generally by numeral **24** and includes a pair of structural angles **26**, **28** which are secured together in spaced relation with one pair of flanges **30** thereof extending parallel to one another and vertically spaced apart. At one end angles **26**, **28** are secured together by welding to an end plate **32** provided with a foot **34** secured thereto and reinforced by a gusset plate **36**. End plate **32** preferably spans the horizontally extending flanges **30** of angles **26**, **28** and extends from the vertically disposed flanges **38** of these angles to beyond the free edges of flanges **30** as shown in FIG. 1. Foot **34** is in the form of a small flat plate which is welded to the inner edge of end plate **32**.

The opposite ends of angles **26**, **28** are likewise secured together in spaced relation by a second end plate **40** which is reinfroced by a pair of gusset plates **42**. End plate **40** is disposed in a plane perpendicular to angles **26**, **28** and is substantially larger than end plate **32**. As shown in FIG. 5, end plate **40** extends beyond the free edges of horizontal flanges **30** and also extends in the opposite direction substantially beyond the plane of the vertical flanges **38** of angles **26**, **28**. A hook **44** is secured to the end plate **40** and extends in a horizontal plane perpendicular to the vertical plane of plate **40** and centrally of the spaced horizontal flanges **30** of angles **26**, **28**. Hook **44** is fashioned with a nose **46** having a clamping edge **48** which is inclined toward the plane of plate **40** in a direction away from the end **50** of nose **46**.

As is indicated in FIG. 1, clamp **24** is adapted to be arranged within the outside corner of the intersection of panels **10** and **12** with the foot **34** bearing against the panel facing **18** of panel **10** and with the end plate **40** bearing against the outer faces of the vertical flanges **38** of angles **26**, **28**. In this position of clamp **24**, the inclined edge **48** of nose **46** is adapted to engage the waler pin **22** adjacent the end of panel **12**, hook **44** extending between the horizontal flanges **30** of the waler **19** as shown in FIG. 4.

A rod **52** is arranged between the horizontal flanges **30** of angles **26**, **28**. Rod **52** is trapped between flanges **30** by spaced plates **54**, **56** which constrain rod **52** to horizontal sliding movement lengthwise of angles **26**, **28**. As is shown in FIG. 1, the inner panel facing **18** of panel **12** is provided with a plurality of spaced openings **58** which are aligned horizontally between the horizontally extending flanges of waler angles **20**. Rod **52** is adapted to extend through one of the openings **58** with its free end projecting between the waler angles **20**. At its free end rod **52** is provided with a transverse slot **60** into which a wedge **62** is adapted to be driven downwardly. When wedge **62** is driven downwardly through slot **60** it engages the outer end of slot **60** at one edge and the outer faces of the vertical flanges on the waler **19** at its opposite edge to draw clamp **24** tightly against the plywood facing **18** of panel **10**.

As is illustrated in FIG. 1, the horizontal flanges **30** of angles **26**, **28** are formed with two pair of vertically aligned slots **64**, **66**. Slots **64**, **66** extend lengthwise of angles **26**, **28** and are axially offset as illustrated so that their adjacent ends are in overlapping transversely spaced relation. A wedge plate **68**, which is loosely connected to the clamp by means of a chain **70**, is adapted to be driven downwardly through either slots **64** or slots **66** (depending on the location of rod **52**) to prevent panel **12** from shifting outwardly toward the extending end **72** of panel **10** when the wall formed by these panels is poured. More specifically, as shown in FIG. 1 the location of opening **58**, through which rod **52** extends, is such that rod **52** traverses the vertically aligned slots **66** in the horizontal flanges **30** of angles **26**, **28**. Wedge plate **68** is driven downwardly in that portion of slots **66** which extends from rod **52** toward end plate **40**. Wedge plate **68** thus

prevents clamp 24, and thus panel 12 from shifting relative to panel 10 in a direction toward the end 72 of panel 10. This is the direction in which panel 12 would tend to shift when the concrete from which the wall is formed is poured against the plywood facings 18 of panels 10 and 12. Movement of panel 10 away from panel 12 is prevented by the interengagement of wedge 62 in the slot 60 of rod 52.

The two sets of slots 64, 66 are provided in staggered relation as shown so that, regardless of where the closest opening 58 in panel 10 is located, the clamp is adapted to be secured in place. In the arrangement shown, the spacing between openings 58 is less than the distance between the opposite outer ends of slots 64, 66.

In securing end panels 10 and 12 as shown in FIG. 1, the two panels are first arranged in perpendicular abutting relation as shown in FIG. 1 with the end of panel 12 abutting the plywood facing 18 on the inner side of panel 10. Clamp 24 is then mounted on the two panels by inserting rod 52 through that opening 58 in panel 10 which underlies angles 26, 28. As rod 52 is pushed through opening 58, hook 44 is engaged with waler pin 22 so that eventually the clamp will assume the position illustrated in FIG. 1 wherein hook 44 is securely engaged with waler pin 22 and foot 34 is seated against the inner face of the plywood facing 18 on the extending end portion of panel 10. Wedge 62 is then driven downwardly through the slot 60 at the free end of rod 52 to draw the clamp solidly against panel 10. It will be observed that along one edge wedge 62 engages the vertical flanges of waler angles 20 on panel 10. Wedge plate 68 is then driven downwardly through slots 64 or 66 depending upon which of these pair of slots rod 52 traverses. In the arrangement illustrated in FIG. 1, rod 52 traverses slots 66 and wedge plate 68 is, therefore, driven downwardly through slots 66 with one vertical edge of wedge plate engaging rod 52 and the other vertical edge thereof engaging the edge of slot 66 which is adjacent the end plate 40. When two or more clamps 24 are secured in this manner with the vertically arranged spacers on the two panels, the two panels 10 and 12 are securely anchored together. The clamp thus effectively prevents either of the panels from shifting outwardly when concrete is poured between the wall forms at the corner of the structure. It will be appreciated that after the concrete wall has set, the clamp can be easily removed from the panels by withdrawing wedges 62, 68 and unhooking the clamp from waler pin 22.

I claim:

1. A wall form arrangement comprising a pair of upright wall forming panels each having a planar inner surface and arranged in perpendicular abutting relation so that the inner surfaces thereof define the outside corner of the wall to be formed, one of said panels extending substantially beyond the abutting portions thereof, said extending portion of the one panel having an opening extending therethrough, the other panel having an anchor member thereon accessible from the outer face thereof, a clamp for securing said panels together in said relation comprising means forming a base seated against the outer face of said other panel and means engaging said anchor member for fixedly locating the clamp on the outer face of said other panel adjacent the abutting portions of the panels, means forming an arm on said base extending therefrom in a direction generally parallel to the inner face of said one panel and overlying said opening, a rod shiftably mounted on said arm for movement lengthwise of the arm, said rod extending through said opening, means interconnecting said rod with said one panel to prevent movement of said arm in a direction away from said one panel and means interconnecting said rod and said arm to prevent movement of said base and other panel toward said rod, said arm comprises a member having vertically spaced, parallel upper and lower plate portions, said rod being disposed between said plate portions, said plate portions having slots extending vertically therethrough and said last-mentioned means comprising a wedge member extending vertically through said slots between said rods and the ends of the slots adjacent said base.

2. The combination called for in claim 1 wherein the slots in said plates comprise at least two slots in each plate extending lengthwise of the plates and offset from one another with their adjacent ends in overlapping relation.

3. The combination called for in claim 1 wherein said anchor member comprising a vertically extending pin and said anchor engaging means comprises a hook on said clamp.

4. The combination called for in claim 1 including means fixedly mounted on said arm and bearing against the inner face of the extending portion of said one panel.

5. The combination called for in claim 1 wherein said arm comprises a pair of structural angle members connected together with one set of flanges extending vertically in vertically aligned relation and with the other set of flanges extending horizontally in vertically spaced parallel relation.

6. The combination called for in claim 5 wherein said base comprises a plate member fixedly interconnecting said angles at one end thereof and extending in a plane perpendicular to the planes of both sets of flanges.

7. A clamp for connecting together in fixed relation a pair of wall forming panels which are arranged in abutting relation to form an outside corner for the wall and wherein one of said panels extends substantially beyond the abutting portions thereof, said clamp being adapted to be located in the outside corner of said abutting panels and comprising means forming a base adapted to be positioned against the outer face of one of the panels, means on said base forming an arm extending in a direction perpendicular to said base, said arm having a slotted portion extending lengthwise thereof, a rod in said slot and extending transversely of the slot, said rod being slidable in a direction lengthwise of the slot and being connected with said arm to limit axial movement of the rod in at least one direction, said rod being adapted to extend through the extending portion of said one panel and having means thereon for anchoring said rod to said last-mentioned portion of the one panel, means on said base for fixedly connecting said clamp with said other panel, said means on said base for securing the clamp to said other panel comprising a hook member shaped to engage a pin on said other panel and means interconnecting said rod and said arm to prevent movement of said base in a direction toward said rod.

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 779,319 | 1/1905 | Russell | 249—49 |
| 1,603,016 | 10/1926 | Bennetts. | |
| 2,008,162 | 7/1935 | Waddell | 249—48 X |
| 2,582,168 | 1/1952 | Sato | 249—49 |
| 2,595,286 | 5/1952 | Otte et al. | 249—49 |
| 2,896,300 | 7/1959 | Arrighini et al. | 249—194 |

FOREIGN PATENTS

| | | |
|---|---|---|
| 879,371 | 11/1942 | France. |

J. HOWARD FLINT, JR., *Primary Examiner.*