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CONCRETE WALL FORM JOINT

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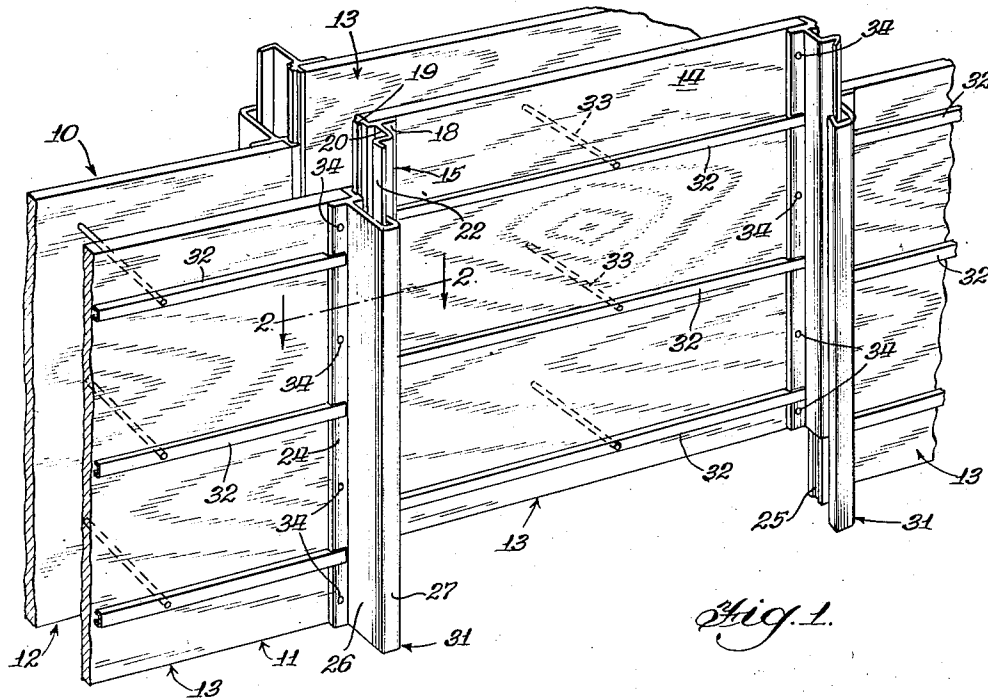


Fig. 1.

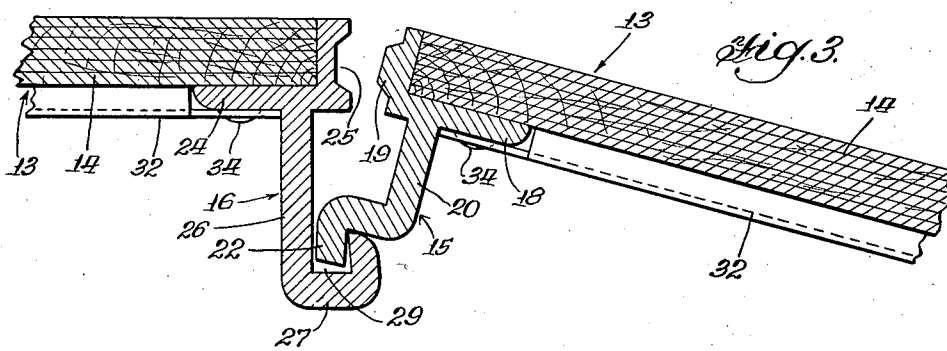


Fig. 3.

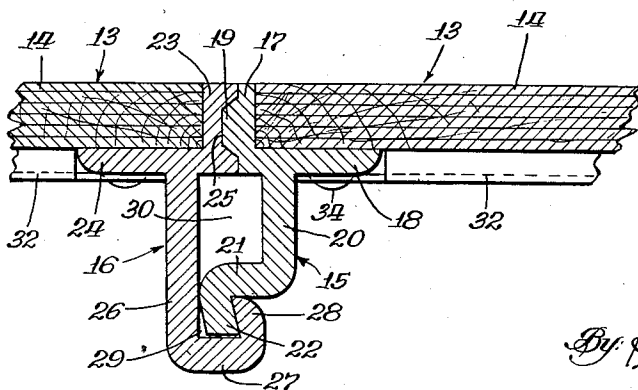


Fig. 2.

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CONCRETE WALL FORM JOINT

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This invention relates to a new and improved concrete wall form joint.

There have been many methods of making forms for concrete walls. Building foundations particularly present difficult problems. The forms consist of spaced apart walls tied together in a fixed spacing during the pouring of the concrete. The walls generally consist of panels of a number to make the size wall desired. The holding of adjoining panels in abutting relationship requires special jointing means and it is with this joint means that this invention is concerned.

It is a principal object of this invention to provide vertically disposed joints between the lateral edges of adjacent panels and wherein the joints are continuously interlocking throughout the vertical length thereof.

Another important object of this invention is to supply interlocking joints for adjacent panel sections of a wall wherein there is no removable or auxiliary hardware necessary to effect an interlocking of the panel joints.

Another important object of this invention is the provision of means in an interlocking joint for concrete wall forms wherein the joint includes dual means for effecting a firm holding together of adjacent wall form panels.

Still another important object of this invention is to provide an interlocking joint between adjacent panels of wall form including a wedge locking of the elements and also tapered pin centering means for further interengagement of the elements of the joint.

Another important object and advantage of this invention lies in the ease of assembly of wall form panels one with the other without any loose hardware merely by inclining one panel with respect to the other and effecting an interlocking of the joint members and by straightening the panels. When concrete is put on the inside of the spaced wall form the outward force of the concrete causes a continually tighter locking of the dual locking joint.

Another and still further important object of this invention is to equip an interlocking joint for the lateral edges of adjacent panels of a concrete wall form with reinforcing flange or wall members which are spaced laterally from the inner abutting edges of the panel whereby the strength of the joint is greatly increased.

Still another important object of this invention is to provide interlocking joint members for concrete wall form panels wherein adjoining panels may have separate vertical adjustment without special hardware or in any way altering the interlocking joint to accommodate stepped up or down foundations as desired.

Another and still further important object of this invention is to provide joint means for adjoining panels of a concrete wall form wherein the ties between the spaced apart wall form are independent of the joint to give greater latitude of positioning.

Other and further important objects and advantages will become apparent from the disclosures in the following specification and accompanying drawing.

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In the drawings:

Figure 1 is a perspective view of a portion of a concrete wall form embodying the interlocking joint of this invention.

Figure 2 is a sectional view taken on the line 2—2 of Figure 1.

Figure 3 is another sectional view similar to that of Figure 2 and showing the assembly of one panel in the process of being interlocked with an adjacent panel.

As shown in the drawings:

The reference numeral 10 indicates generally a concrete wall form having spaced apart walls 11 and 12. Each side wall is composed of a plurality of adjoining panels 13. Each panel 13 comprises a generally rectangularly shaped plywood sheet 14. The vertically disposed lateral edges of the plywood sheets 14 are equipped with interlocking joint members to be subsequently described in detail.

As best shown in Figures 2 and 3 the plywood sheets 14 have a joint element 15 on one side and an interlocking joint element 16 on the other side thereof. Thus, when adjacent panels 13 are arranged side-by-side the interlocking joint elements 15 and 16 act to snugly hold the panels together throughout their full vertical length. It will be seen that the joint elements 15 and 16 act to protect the edges of the plywood sheets 14. Further these same elements act to provide centering interengagement between the elements and provide wedging means therebetween to effect a secure locking of adjacent panels when the joint is interlocked as shown in Figure 2.

The locking element 15 includes an angle portion formed of legs 17 and 18 to receive the plywood sheet 14. Any suitable means such as the screw 34 as shown may be used to fasten the plywood sheet 14 to the leg 18 of the element 15. The leg 17 projects inwardly of the panel 13 and its inner edge forms a short continuation of the plywood sheet 14 so that actually the plywood of one panel does not directly contact the plywood of an adjacent panel. This of course protects the somewhat fragile edges of the plywood by means of interposing the metal joint. The joint elements 15 and 16 are preferably made of a lightweight metal alloy although any suitable material may be used. The leg 17 further includes an endwise projection 19 spaced outwardly of the inner edge and substantially in alignment with a portion of the plywood sheet 14. The projection 19 is tapered and is employed as a centering means with an adjacent panel and also the means for effecting positive interengagement therebetween. The joint member 15 also includes an outwardly projecting rib 20 which is offset laterally from the leg 17 and extends outwardly from, and at right angles to, the leg 18. The offsetting of the flange or wall 20 is with respect to the end defining leg 17 of the angle element of this joint member 15. The outer end of the wall or flange 20 is bent at substantially right angles toward the joint element 16 as shown at 21. From this point the joint element 15 continues outwardly and at an angle slightly away from the joint element 16 as shown at 22. The projection or bent end 22 thus forms an acute angle with respect to the flange or bent portion 21 which is disposed substantially parallel to the plywood panels 14. One half of the joint has now been described and it will be shown hereafter how this portion of the joint complements the portion 16 of the joint now to be described.

The joint element 16 is also provided with a plywood receiving angle portion defined by leg members 23 and 24 corresponding to the leg members 17 and 18 of the element 15. The plywood sheet 14 is received into the right-angle opening defined by the legs 23 and 24 and is held by suitable means such as the screw 34 to the

flange-like leg 24. The adjoining legs 17 and 23 are substantially coextensive and thus form the inner abutting edges of adjacent panels 13. A tapered opening 25 is provided in the outer side of the leg 23 in alignment with the tapered projection 19 of the leg 17. Thus engagement of the longitudinally extending tapered portion 19 with the longitudinally extending tapered opening 25 causes an alignment of the adjacent panels such that the inner surfaces thereof will be perfectly smooth and uninterrupted even at the position of the joints thereby resulting in a smooth concrete wall. It will thus be apparent that the mating of the tapered projection 19 with the tapered opening 25 in the legs 17 and 23 respectively of the joint elements 15 and 16 act to center and guide the adjacent panels into proper relative position and simultaneously act as permanent interengagement members between the joint elements.

An outwardly extending flange or wall 26 on the element 16 is spaced in offset position relative to the leg 23 and extends outwardly from the leg 24 at substantially right angles with respect thereto. The flange 26 lies substantially parallel to the flange 20 of the joint element 15. The outer end of the flange 26 is bent at substantially right angles toward the joint element 15 as shown at 27. The member or end 27 fits over the outer, slightly angular projection 22 of the joint member 15. Finally the joint element 16 has an inwardly projecting end 28 disposed slightly angularly inwardly toward the flange 26 whereupon the angle between the end 28 and the portion 27 is acute and substantially the same as the acute angle between the elements 21 and 22 of the joint member 15. The interlocking of the tongue-like male projections 22 with the female sockets 29 of the joint members 16 defined by the sides 26, 27, and 28 form a wedging interlock for the joints and are the means for holding adjacent panel members firmly together and simultaneously the means for effecting an increasing tightening of the interlocking joints upon the application of force to the inside of the panels by the natural outward urging of concrete poured within the forms. The projections 22 and sockets 29 are generally transversely disposed with reference to the joint while the angles thereof are such that the adjoining panels are brought closer together as the panels push outwardly.

The joint parts 15 and 16 complement each other to provide a continuous holding together in a rigid manner of adjacent edges of panels 13. It will be apparent that each panel is provided with a joint part 15 and a joint part 16 on opposite sides thereof. The panels and their respective joint parts are assembled as shown in Figure 3 wherein the tongue or male portion 22 of the joint part 15 is preliminarily inserted into the socket or female portion 29 of the joint part 16. The panel with the joint part 15 is then swung about the tongue 22 as a hinge so the tapered projection 19 is forced into the tapered opening 25 within the leg member 23 of the joint part 16. Simultaneously of course the wedging angle of the tongue projection 22 within the receiving sockets 29 causes a firm snugging up of the parts 15 and 16 to hold the adjoining panels 13 rigidly with respect to each other. When the joint is assembled as shown in Figure 2 it should be understood that it is a dual operated joint—that is, it has the interengaging portions 19 and 25 and the wedging portions 22 and 29. The offset flanges 20 and 26 with respect to the inner abutting edges of the legs 17 and 23 with their outer interengaging wedges form a box 30. It is this box-like opening 30 which accomplishes the effective interlock of the adjacent panels and provides for the constant tightening of the joint members 15 and 16 relative to each other. The forces applied to the inner faces of the panels 13 cause the joint to attempt to push outwardly whereupon the forces carried through the offset flanges 20 and 26 result in an ever increasing tightening of the wedge surfaces 22 and 29 thereupon pro-

ducing an effective interlocking of the concrete wall form panels 13.

The vertically disposed interlocking joints designated generally by the numeral 31 have now been described as including complementary portions 15 and 16 which as shown have interengaging and centering elements 19 and 23 and wedge locking elements 22 and 29. If the panels are made of plywood it is generally desirable to effect a reinforcing thereof by horizontally disposed reinforcing members 32 as best shown in Figure 1. These reinforcing members may take any form as desired and are the means for receiving tie elements 33 which must necessarily tie the spaced walls 11 and 12 as shown in Figure 1 with the proper spacing to effect a uniformly thick foundation or wall of concrete. The reinforcing members 32 may or may not as desired be attached to the joint elements 15 and 16 and the tie members may be of any form desired.

As shown in Figure 1 the joint facilitates separate vertical adjustment of panels for stepped up or down foundations regardless of the degree of step up or down. It should be obvious that the joints will effectively cooperate with each other regardless of the vertical positioning of the adjoining panels 13 and similarly no auxiliary hardware is necessary to effect this step up or step down in the same manner as no auxiliary hardware is necessary for effecting an interlock of the joint parts 15 and 16.

Numerous details of construction may be varied throughout a wide range without departing from the principles disclosed herein and we therefore do not propose limiting the patent granted hereon otherwise than as necessitated by the appended claims.

What is claimed is:

1. A joint for adjacent panel members of the type which are generally vertically disposed and have a smooth inner surface to receive concrete thereagainst, the joint comprising a vertically disposed female part fastened to a side edge of one panel member, said female part including an angle portion having a first part fitting over the side edge of said panel member and a second part abutting the back wall of said panel member, an outwardly projecting rib from the second part of the angle portion, said outwardly projecting rib having a portion bent laterally in a direction generally parallel to the panel and thence bent inwardly toward the panel member and generally parallel to said rib and forming a receiving socket defined by the rib and its bent end portions spaced substantially outwardly from said panel member, and a vertically disposed male part fastened to a side edge of an adjacent panel member and lying immediately adjacent said female part, said male part including an angle portion having a first part fitting over the side edge of said adjacent panel member and a second part abutting the back wall of said adjacent panel member, an outwardly projecting rib from the second part of the angle portion and spaced longitudinally apart from the said rib on the female part, said outwardly projecting rib having a portion bent laterally in a direction generally parallel to said adjacent panel member and spaced inwardly of the corresponding portion on the female part, and said rib further bent outwardly generally parallel to said rib, and said panel members being assembled by angling with respect to each other and causing the outwardly bent portion of the male part to engage within the receiving socket in the female part, and the joint forming a substantial box structure with its ribs and bent end portions.

2. A device as set forth in claim 1 in which the inwardly bent portion of the female part is inclined slightly toward its rib and similarly the outwardly bent portion of the male part is inclined slightly toward its rib whereby when the interlocking female and male parts are put together they tend to engage with increasing force as force is applied to the smooth inner surface of the wall formed by the adjoining panel members.

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3. A device as set forth in claim 1 in which the first part of the female angle portion has a tapered socket in the outside thereof and the first part of the male angle portion has a correspondingly tapered projection on the outside thereof whereby the tapered projection and socket accurately center the panel members together while the outwardly spaced interengaging elements securely lock the panel members together.

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