United States Patent [19]

Luyben

[11] **3,722,849**

[45] **Mar. 27, 1973**

[54] CONCRETE FORM CLIP

[76] Inventor: **William John Luyben,** 14005 N.E. Marine Drive, Portland, Oreg. 97230

[22] Filed: **Nov. 5, 1971**

[21] Appl. No.: **196,130**

[52] **U.S. Cl.** .....**249/219 R,** 249/34

[51] **Int. Cl.** **E04g 17/14**

[58] **Field of Search** .....249/219 R, 219 W, 34

[56] **References Cited**

UNITED STATES PATENTS

2,973,567	3/1961	Brow	249/219 R
2,490,228	12/1949	Pontiere	249/219 R
2,378,850	6/1945	Hyre	249/219 R X
3,547,397	12/1970	Brow	249/219 R
1,437,323	11/1922	McClure	249/219 R
2,289,819	7/1942	Wirtane	249/34

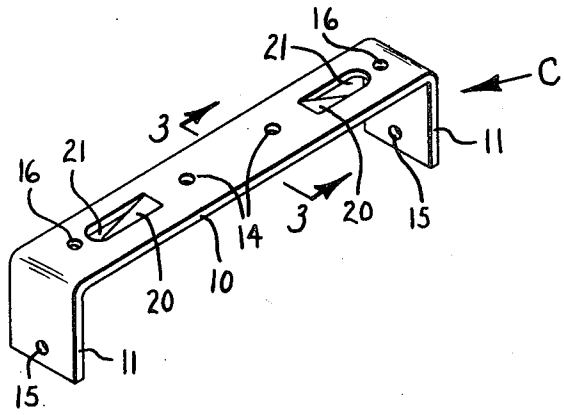
Primary Examiner—J. Spencer Overholser
Assistant Examiner—B. D. Tobor
Attorney—Lee R. Schermerhorn

[57] **ABSTRACT**

A metal bar has upturned end flanges on opposite ends of a base portion arranged to provide stops against the outward movement of a pair of vertical form panels resting on the clip. Spaced inwardly from said end flanges is a pair of outwardly directed tongues struck out from said base portion in inclined positions with elevated ends spaced from said flanges. The form panels are received in the spaces between the end flanges and the tongues. Panels improperly placed in the mid portion of the clip may be readily pushed out against the end flanges or the pouring of the concrete will push the panels out to their proper positions. The tongues provide sloping ramp surfaces to facilitate the outward movement of the panels.

The clip is also utilized in making forms for the monolithic pouring of a wall and footing. In one embodiment the clip is mounted on stakes in the footing pour area to support the wall form panels. In another embodiment in similar arrangement the clips are made long enough for mounting on the top edges of the footing form panels.

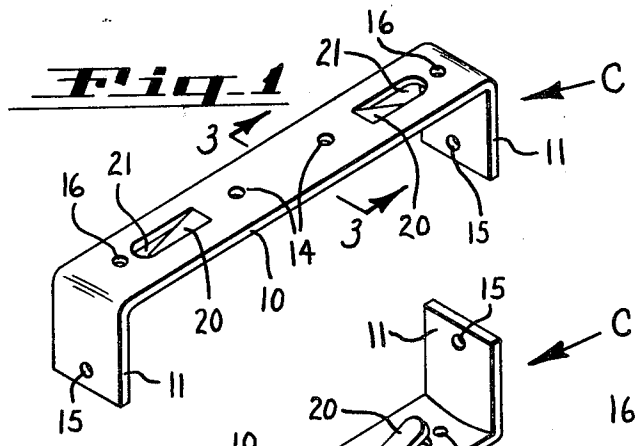
9 Claims, 11 Drawing Figures



Patented March 27, 1973 3,722,849

2 Sheets-Sheet 1

Fig. 1



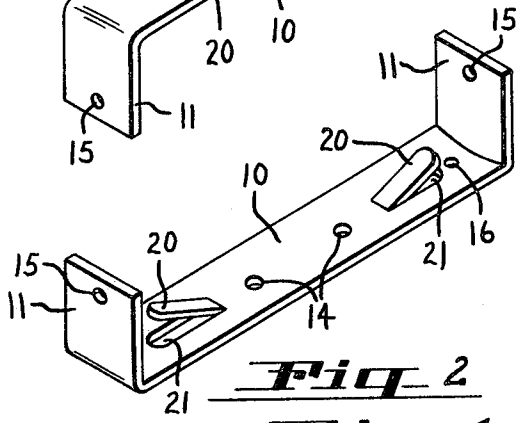


Fig. 2

Fig. 4

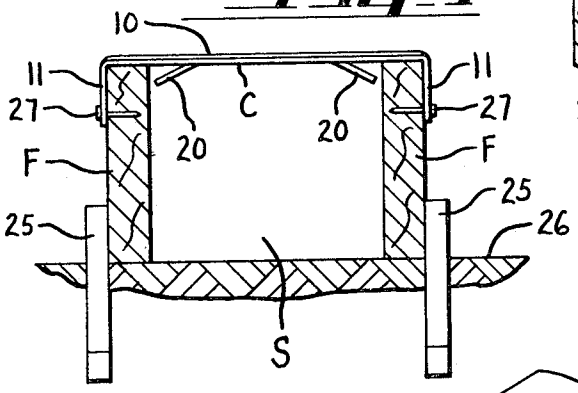


Fig. 5

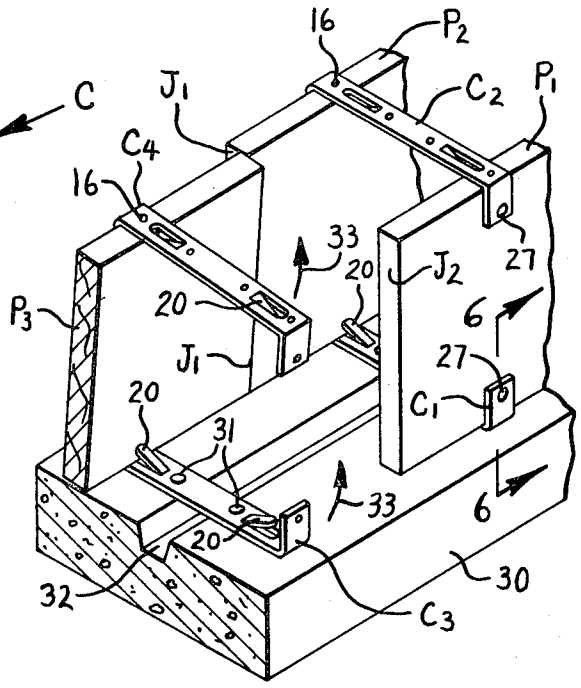
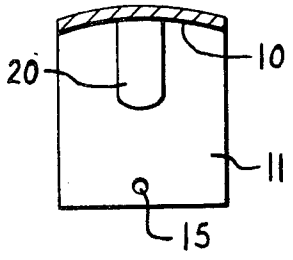


Fig. 3



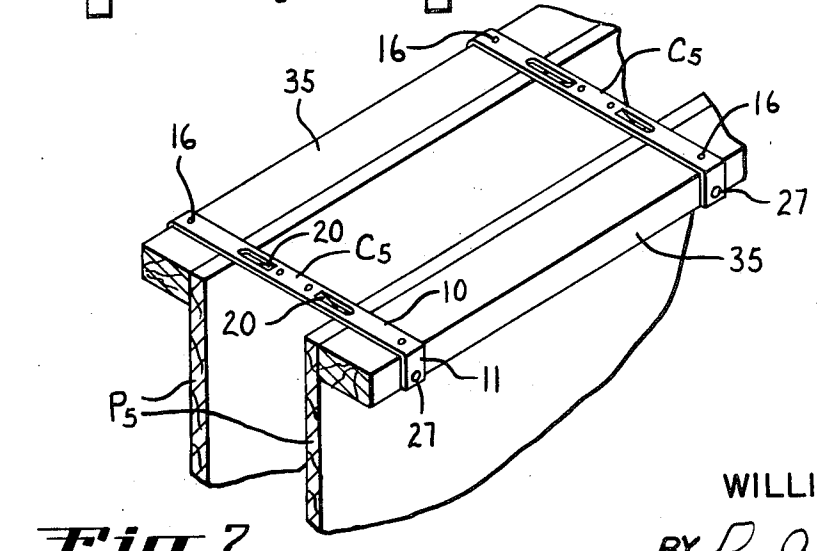


Fig. 7

INVENTOR
WILLIAM JOHN LUYBEN
BY Leo R. Sebermeister
Attorney

2 Sheets-Sheet 2

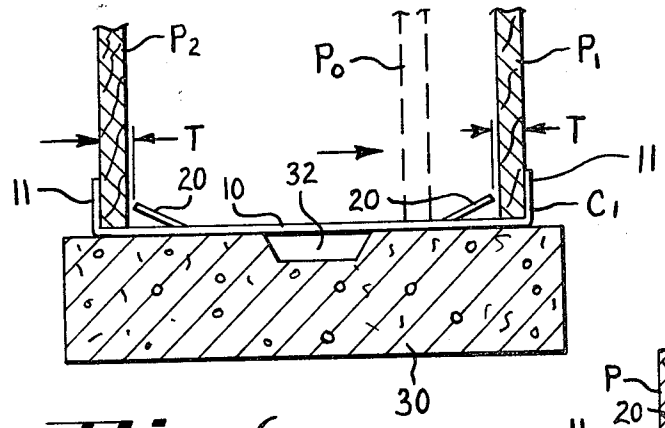


Fig. 6

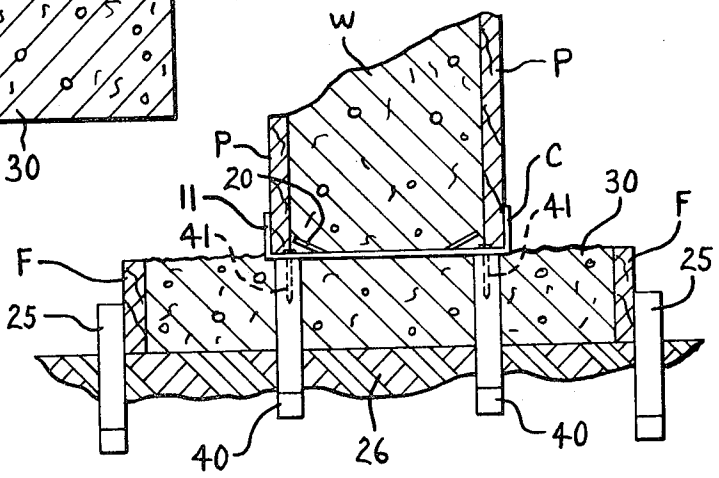


Fig. 8

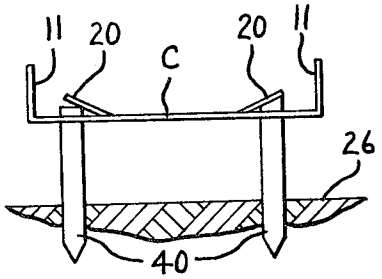


Fig. 8A

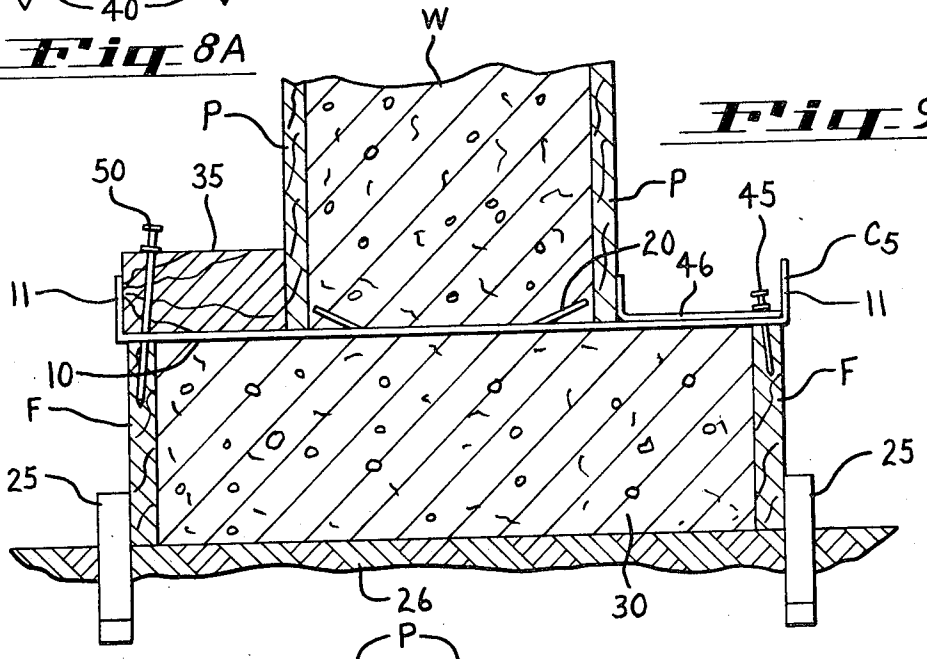


Fig. 9

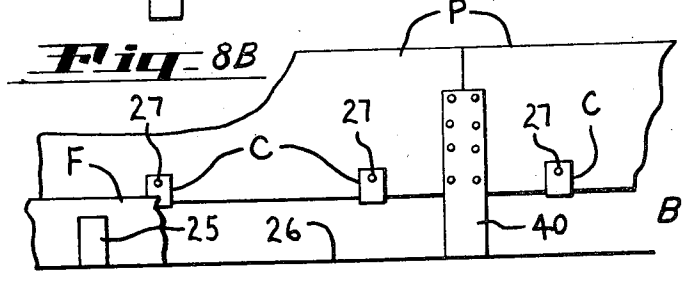


Fig. 8B

INVENTOR
WILLIAM JOHN LUYBEN
BY Lee R. Schermerhorn
Attorney

CONCRETE FORM CLIP

BACKGROUND OF THE INVENTION

This invention relates to improvements in a concrete form clip and has particular reference to clips for forms used in the construction of concrete footings and walls.

Using conventional form clips, it is difficult to set the form panels in proper positions to insure a uniform thickness of wall. Once improperly placed it is difficult to shift a panel to proper position. There are also other disadvantages in using conventional types of form clips.

Objects of the invention are, therefore, to provide an improved form clip, to provide a form clip which facilitates proper positioning of the form panels for uniform wall thickness, to provide a form clip which will permit the automatic adjustment of the panels to their proper positions by the pressure of the poured concrete when the panels have been improperly set in the clips, to provide a form clip which will stabilize an upstanding panel, to provide a form clip which will hang in approximately horizontal outstanding position from the upper edge of a form panel, to provide a form clip having a novel arrangement of inclined tongues for the purposes described, and to utilize the clip in making forms for the monolithic pouring of walls and footings.

SUMMARY OF THE INVENTION

The present clip has a pair of upturned end flanges and a novel arrangement of inclined tongues between the end flanges. The direction of inclination of the tongues permits the form panels to move outward readily into their proper positions either by applying manual pressure or by the pressure of the concrete when the panels are improperly set in the middle of the clips.

Also, the tongues may act as struts to hold the panels temporarily in upright position while the form is being erected. In inverted position of the clip the struts hold the clip in outstanding, near horizontal position from the upper edge of a panel until the clips and panels are fully assembled and secured.

The clips are also utilized in making forms for the monolithic pouring of walls and footings, either by mounting the clips on stakes in the footing pour area, or on the top edges of the footing form panels, to support the wall form panels.

The invention will be better understood and the foregoing and other objects and advantages will become apparent from the following description of the preferred embodiment illustrated on the accompanying drawings. Various changes may be made, however, in the details of construction and arrangement of parts and certain features may be used without others. All such modifications within the scope of the appended claims are included in the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1 and 2 are perspective views of a form clip embodying the invention;

FIG. 3 is a view on the line 3—3 in FIG. 1;

FIG. 4 is a sectional view through a form for a concrete footing showing one use of the present clip;

FIG. 5 is a perspective view of a form for a low wall on a precast footing, showing further applications of the clip;

FIG. 6 is a view on the line 6—6 in FIG. 5;

FIG. 7 is a view showing a clip of longer dimension applied to box panel form members;

FIG. 8 is a cross sectional view showing the clip of FIGS. 1 and 2 utilized in a form for the monolithic pouring of a wall and footing;

FIGS. 8A and 8B show modifications for monolithic pouring; and

FIG. 9 is a cross sectional view showing the clip of FIG. 7 utilized in a monolithic pouring form.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in FIGS. 1 and 2, the clip C is formed from a flat metal bar having a base portion 10 and end flanges 11 bent at right angles to the base portion. In this forming process the base portion 10 is preferably curved transversely to impart added stiffness as shown in FIG. 3. Nail holes are preferably formed at 14, 15 and 16.

A pair of tongues 20 is struck out from the base portion 10, leaving holes at 21 between the bases of the tongues and flanges 11. The free ends of the tongues are directed toward the flanges 11 with the length of the tongues inclined away from these free ends. Each tongue 20 is inclined, preferably at an angle of about 30° from the base portion 10 so that the tongue covers or overlies the hole 21, although the precise degree of inclination is not critical. The position and angle of the tongue are such that the dimension T in FIG. 6 is slightly in excess of the thickness of the panels P of the form.

In erecting a form for a footing as shown in FIG. 4, only top clips are necessary. The lower edges of footing form panels F are kept from spreading from the pressure of wet concrete poured in the space S by stakes 25 driven into the ground 26, the upper edges of the panels are kept from spreading by the flanges 11 of the clips, the tongues 20 preventing the panels from falling inward until nails 27 or 28 are driven. It will be apparent that the tongues 20 make the nails 27 or 28 unnecessary except to prevent the clips from being knocked out of place during the pouring of the concrete.

FIG. 5 illustrates the above-mentioned advantages of the present form of clip. Panels P_1 and P_2 have been erected on the footing 30 by means of clips C_1 and C_2, the nails 27 being optional. Top clip C_2 is arranged the same as the clip shown in FIG. 4. Bottom clip C_1 is identical to the clip C_2 except that it is inverted and secured to previously poured footing 30 by nails, screws, bolts or dowels in the holes 14, these instrumentalities being secured in the footing before the concrete in the footing has fully hardened or secured in wood blocks set in the wet concrete.

The joint J_1 between panels P_2 and P_3 can also be offset or staggered from the joint at J_2 between panel P_j and the adjoining panel, not shown, making panel P_1 in a position opposite the joint J_1. This allows the stiffness of panel P_1 to be transferred through clips C_1, C_2, C_3, C_4 to each side of joint J_1 thereby holding panels P_2 and P_3 in line with each other. This lining up is accomplished without nailing or otherwise connecting panels P_2 and P_3 together.

Nail 27 in hole 15 of clip C_1 into panel P_1 would be used in event the footing were poured with an irregular

surface and clip C_1 needed to be held up against the bottom of panel P_1 to prevent flange **11** from bending outwardly from pressure being exerted at the extreme upper end of flange **11**. Nail **27** in clip C_2 would be used to prevent accidental dislodging of the clip during the concrete pouring process.

With reference to FIG. **6**, it will be observed that if the bottom edge of a panel is inadvertently set in the space between the two tongues **20** as indicated at P_0 instead of in the space T, the pouring of the concrete will automatically force the panel outward into its proper position at P_1. The fluid pressure of wet concrete acting against the inside face of a panel at P_0 causes it to slide up the ramp surface of inclined tongue **20** until the outward movement of the panel is stopped by the end flange **11** of the clip. Flange **11** is higher than the upper end of tongue **20**.

The desired uniform thickness of wall is thereby assured, notwithstanding possible carelessness on the part of the workmen. If the improper position of the panel between the tongues **20** is discovered before the concrete is poured, the panel may be readily moved outward by sliding it upward along the ramp surface of the tongue until the panel falls into the spaces T.

If the panels are heavy and are inadvertently placed in position P_0 or on top of tongue **20** then tongue **20** may be bent downwardly by the action of moving from P_0 to P_1. In any case, tongue **20** will not restrict the outward movement of the panel from P_0 to P_1 but once the panel is properly placed in space T, the tongue **20** will restrict the tendency of reverse movement from P_1 to P_0. This one-way holding action is also effective at the top of the form.

The present tongue arrangement also permits the form panels to be clamped securely and rigidly in the clips if desired. It will be apparent that by pressing the tongue **20** downward against the inside face of panel P_1 in FIG. **6**, the tongue may be caused to tightly clamp the panel against flange **11**. In a similar manner, the top clips may be clamped on the panels by bending tongues **20** upward against the faces of the panels. This may be done by a pair of pliers.

The next pair of panels in FIG. **5** is to be supported and positioned by a bottom clip C_3 secured by nails **31** in the holes **14**. The holes **14** are spaced apart a sufficient distance to lie on opposite sides of the usual keyway **32** in the footing **30**. A panel P_3 has been set in the clip C_3 and other bottom clips, not shown, similar to clip C_3.

If the space T is made equal to the thickness of the panel, the tongue **20** acts as a strut to brace the panel P_3 and hold it in upright position temporarily until the other parts are assembled. In such case, the top clip C_4 is self-supporting on the upper edge of panel P_3 with tongue **20** forming a strut bearing against the inside face of the panel to hold the clip in outstanding, approximately horizontal position.

Thus, a series of the bottom clips C_3 hold the panel P_3 upright with a series of top clips C_4 in position to receive an opposite panel in alignment with the panel P_1. The temporary supporting functions of the tongues **20** make it convenient for a single workman to install the form. For convenience of illustration, form parts are illustrated in FIG. **5** for a very low wall but it will be understood that forms for a considerably higher wall may be erected in the same manner, the panels including walers and conventional form ties at intermediate height if necessary.

It is generally desirable to make the dimension T in FIG. **6** somewhat greater than the thickness of the panel in order to insure that a panel moved outward from P_0 to P_1 will readily drop into space T as above described in connection with clip C_1. In such case, the tongue **20** may not function satisfactorily as a strut or brace to maintain a temporary perpendicular relationship between the clip and panel in the erection of the form as described in connection with clips C_3 and C_4 in FIG. **5**. The present form of clip provides the option of making dimension T optimum for the feature which is most desired.

Also, even when the dimension T is somewhat greater than the thickness of the panels, the strut or bracing action described above may be obtained by swinging or skewing the clips slightly as indicated by arrows **33** in FIG. **5**. This has the effect of reducing the dimension T so that bottom clip C_3 will hold panel P_3 upright and top clip C_4 will support itself in outstanding position on the top edge of the panel.

FIG. **7** illustrates a modification in which the clips C_5 are the same as previously described except that the distance T is extended to include the width of framing member **35**. In this case the panels P_5 are box panels having horizontal framing members **35** at their upper and lower edges and similar vertical framing members on the opposite ends of the panels. The features and advantages of top and bottom clips C_5 are the same as explained in connection with FIGS. **5** and **6**. The framing members **35** are usually **2x2**, **2x3** or **2x4** inch pieces of lumber attached or not attached to the panel and positioned either on edge or flat against the panel.

FIGS. **8** and **9** show two different methods of using the clip for pouring the footing and the wall at the same time, thus achieving a monolithic pour and eliminating the cold joint between footing and wall and also realizing the economies of a single pouring operation.

In FIG. **8** the clip C of FIGS. **1** and **2** is supported on a pair of stakes **40** between footing forms F and held in place by nails **41** in holes **16**. Footing forms F are separate from the rest of the forms and any width footing **30** may be poured with any width wall W. Wall panels P are positioned by the clip C as described in connection with FIGS. **5** and **6**.

The clips C may also be supported in elevated position in other ways. For example, the clips may be nailed to the sides of stakes **40** by the use of nail holes **15**. Or, using the nail holes **14**, a clip may be nailed to the top of a single wide stake which spans the distance between holes **14**. In a similar manner a clip may be nailed to the top of a concrete block or other suitable support which will be incorporated in the footing **30**.

Still another way of mounting the clips on stakes is shown in FIG. **8A**. Here the tops of the stakes **40** enter the holes **21** and are stopped against tongues **20** without the need for nails **41**. The tops of the stakes may be horizontal or slanted, as shown. The footing and wall panels are not shown.

As another alternative, in FIG. **8B** the wall form panels P are nailed to the sides of stakes **40**, or supported on posts or blocks, at the desired elevation above the ground and clips C are held up against the

bottom edges of the panels by nails 27 through holes 15, the clips being applied in intervals between the supporting stakes, posts or blocks, as shown.

In FIG. 9 the clip C_5 as shown in FIG. 7 spans the distance between footing forms F and bears the weight of wall form panels P and transfers this weight to the tops of footing forms F. The use of nail 45 through hole 16 (FIG. 7) into the top edge of footing form F holds the outward pressure of the concrete against form F and also holds the clip in position. This nail passes through a metal spacer 46.

A framing member 35 may be used to close the space between footing form F and wall form P when there is likelihood of concrete overflowing the footing form. Framing member 35 need not be nailed or supported in any way other than acting as a spacer between panel P and flange 11. Nails 50 may be driven through framing member 35 directly into footing form F in intervals between the clips C_5 to hold all elements of the form securely and eliminate the need for nails through holes 16.

Thus FIG. 9 illustrates alternative forms of construction. SPacers 46 may be used at both ends of clip C_5, framing members 35 may be used at both ends, or the two may be used in combination, as shown.

Having now described my invention and in what manner the same may be used, what I claim as new and desire to protect by Letters Patent is:

1. A concrete form clip comprising a metal bar having upturned end flanges perpendicular to an intermediate base portion, and a pair of inclined tongues directed outwardly and upwardly from said base portion toward said end flanges, each tongue having a free end elevated above said base portion and opposed to one of said end flanges at a distance therefrom to receive a form panel in the space between said flange and the end of the tongue, said tongues providing sloping ramp surfaces for sliding movement of the panels on the tongues outward from the middle part of said base portion into said spaces between said end flanges and the ends of the tongues.

2. A clip as defined in claim 1, each tongue forming an inclined strut to maintain a near perpendicular angular relationship between said panel and said base portion of the clip whereby a bottom clip on a bottom edge of a panel will hold the panel upright, and whereby an inverted top clip on a top edge of an upright panel will be held in outstanding position from the panel.

3. A clip as defined in claim 1 wherein said tongues are struck out from said base portion leaving holes between said flanges and the end portions of the tongues which are connected to said base portion of the clip.

4. A clip as defined in claim 3, said holes acting as receivers for the tops of stakes or posts inserted in said holes and said tongues covering said holes and acting as stops for the top ends of said stakes or posts.

5. A clip as defined in claim 1 supporting a pair of wall form panels, means supporting said clips and wall form panels in elevated position above the ground level, and a pair of footing form panels at a distance on opposite sides of said wall form panels, for pouring a monolithic wall and footing.

6. A clip as defined in claim 1 mounted at its ends on a pair of footing form panels, said first form panels being wall form panels supported on said clip in positions inward from said footing form panels, and a pair of spacers on said clip between said end flanges and said wall form panels, for pouring a monolithic wall and footing.

7. The invention defined in claim 6, said spacers closing the spaces between said footing form panels and said wall form panels to prevent concrete overflowing said footing form panels.

8. A form as defined in claim 5, said supporting means comprising stakes or posts.

9. A clip as defined in Claim 1 supporting a pair of wall form panels, and a pair of footing form panels at a distance on opposite sides of said wall form panels supporting said clips and wall form panels in elevated position above the ground level.

* * * * *