Jan. 14, 1964 D. M. KITCHEN 3,117,358

CONNECTOR FOR CEMENT RADIUS FORMS

Filed June 28, 1961

FIG. 1.

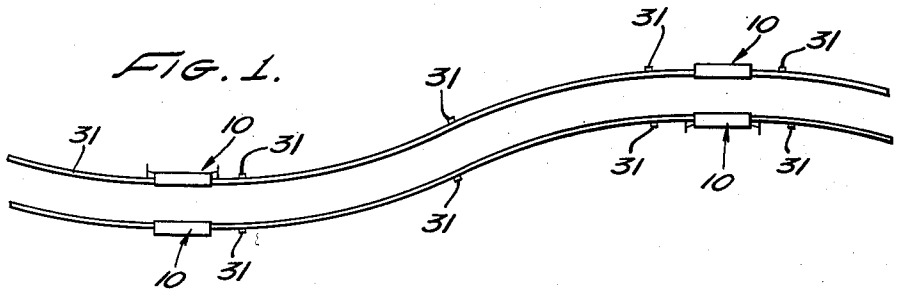


FIG. 2.

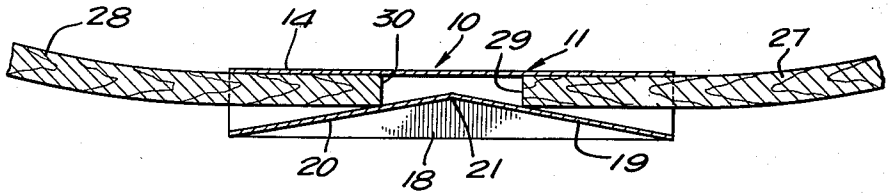


FIG. 3.

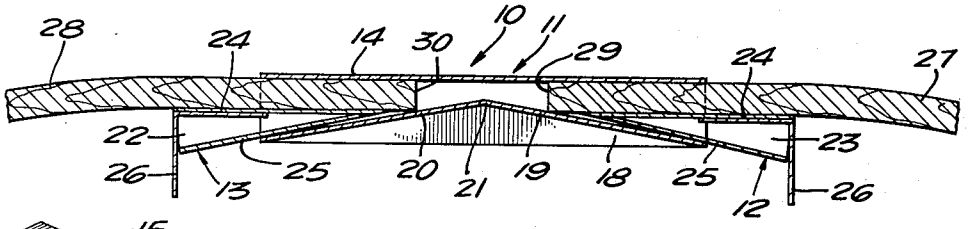
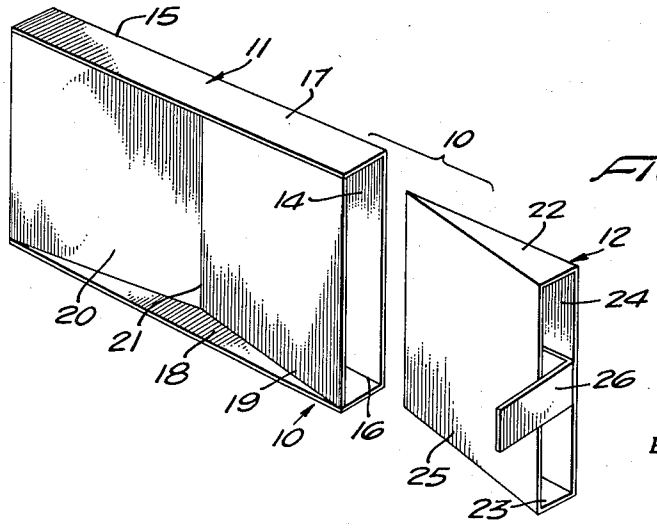


FIG. 4.



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CONNECTOR FOR CEMENT RADIUS FORMS

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This invention relates to an apparatus for splicing the ends of boards together to construct a continuous curved form or mold and, in particular, is directed to a device for connecting boards for pouring curved concrete slabs, curbs or gutters.

In numerous situations a curved form for pouring concrete is longer than the length of any one form board and therefore it is necessary that more than one form board be used and their ends butted together and spliced in some manner. A common method of effecting this splice is to nail a short board on the back of the form boards and overlapping the butted ends of the form boards. This type of splice increases the difficulty of making a uniformly curved form since the splicing board if heavy enough to effect an adequate splice makes the form more difficult to curve at that point thereby tending to produce a flat portion in the overall curved form. If the splicing board is relatively thin so that the curve may be easily formed, experience has shown that a relatively pointed portion of the overall form is formed where the form boards are butted together. Both this flat portion and this pointed portion of the overall form are objectionable in that an irregular curve results or extensive handworking must be performed on the concrete before it has completely set and after the form boards have been removed.

It is a common practice to reuse form boards as many times as possible. By proper coating of the surface of the form board, there is no appreciable damage thereto by the concrete. The determining factor in the number of times a form board may be used has been found to be the condition of the end portions of the boards where multiple nailing to the splice board must be made each time the form board is used. For example, the major portion of a form board may be in satisfactory condition to be reused again, but the repeated nailing and removal of nails on the end portions of the board may have so damaged those portions as to preclude their reuse. Although the end portions could be cut off and the shorter board reused, this would entail an additional number of splices and therefore compound the cost of splicing as well as the problems set forth above.

Various types of all-steel prefabricated curved forms are commercially available with means for connecting one form to the next form, but these represent a large initial investment as well as lacking in versatility as to radius of curvature or variance from the vertical of the form.

It is an inherent problem when splicing form boards that each board may vary in thickness and width from the next adjacent form board or even a multiplicity of nominal sized boards may be used in one forming job.

Accordingly it is a principal object of this invention to provide a connector for form boards which does not require nailing or other fastening to the end of the form board.

Another object of this invention is to provide a connector for form boards for constructing curved forms wherein pointed or flat portions of the form at the area of the splice are virtually eliminated.

A further object of this invention is to provide a connector for form boards which is relatively inexpensive and may be readily installed without special tools.

Another object of this invention is to provide a connector for form boards which may be used on either an inside or outside curve and is adapted to receive various

nominal sized form boards as well as accommodating the slight variances in each nominal size.

Other and more detailed objects and advantages of this invention will appear from the following description and the accompanying drawings.

In the drawings:

FIGURE 1 is a plan view of a two-sided curved concrete form with four of the devices of this invention installed at separate locations.

FIGURE 2 is a sectional plan view showing the device of this invention connecting the ends of two form boards for the outside radius of a form.

FIGURE 3 is a sectional plan view showing the device of this invention connecting the ends of two form boards for the inside radius of a form.

FIGURE 4 is a perspective view showing the device of this invention.

Referring now to the drawings, the device of this invention, generally designated 10, is comprised of a housing 11 and a pair of identical wedges 12 and 13. The housing 11 is provided with one substantially flat wall 14 having a pair of relatively parallel longitudinal edges 15 and 16. A pair of flanges 17 and 18 are perpendicular to the wall and are connected thereto along the longitudinal edges 15 and 16, respectively. Although it is not essential, I prefer to make the housing 11 out of sheet metal and therefore the flanges 17 and 18 may be integral with the wall 14 and formed merely by bending an appropriately shaped blank of sheet metal along the edges 15 and 16 at right angles to the wall 14.

A pair of plates 19 and 20 or a single plate bent along the line 21 extend between the flanges 17 and 18 and are substantially perpendicular thereto. These plates are secured to the flanges by any convenient means such as welding. The plates 19 and 20 are positioned at a slight angle with the wall 14 with their joining edge 21 in closest proximity with the wall 14. Each of the plates 19 and 20 along with the wall 14 and flanges 17 and 18 therefor forms a wedge shaped cavity in the housing 11 with the larger end of the cavity open and at either end of the housing.

Means are provided for securing the form boards in the housing 11 and as shown in the drawings, these means may be comprised of wedges 12 and 13. Each of the wedges are provided with a pair of parallel wedge-shaped sides 22 and 23 and a pair of converging sides 24 and 25. As best shown in FIGURE 3, I prefer to make the acute angle between sides 24 and 25 of the wedges slightly larger than the acute angle formed by either of the plates 19 or 20 with the wall 14 of the housing. A tab 26 is provided on the large end of each wedge for facilitating insertion and removal of the wedge in the housing 11.

In using the connector of this invention, the form boards 27 and 28 are inserted into the wedge-shaped cavities formed by plates 19 and 20, respectively, with the wall 14 of the housing 11. A certain amount of longitudinal force is applied to each of the form boards toward each other so that the ends 29 and 30 thereof are jammed between the wall 14 and the plates 19 and 20, respectively, of the housing. This jamming of the ends of the form boards in the wedge-shaped cavities provides the necessary longitudinal and vertical rigidity to the overall form as well as the rigidity of the connection between the boards. The form boards are prevented from relative longitudinal movement away from each other by any conventional means such as stakes 31 nailed to the form boards and pounded into the ground. The connector 10 is always oriented relative to the form boards so that the cement is to be poured against the exterior surface of the wall 14.

When making an outside radius curve, such as shown in FIGURE 3, the wedges 12 and 13 are inserted between

the form boards 27 and 28 and the plates 19 and 20, all respectively, to hold the form boards against the wall 14 while the bend is being made in the form boards so that a substantially continuous surface is effected by the exterior of the wall 14 and the form boards for the concrete form. After the concrete has been poured and sufficiently set, the wedges 12 and 13 are removed by a hammer blow against the tabs 26. When an inside radius curve is being made, such as shown in FIGURE 2, it is not essential to use the wedges 12 and 13 since the direction of bend of the form boards forces the boards against the wall 14 and the ends 29 and 39 of the boards are held securely by the plates 19 and 20, respectively, of the housing.

Although the wall 14 of the housing 11 is substantially straight, the housing is short relative to the radius of curvature of the form and therefore the flat portion of the curve formed by the wall 14 is negligible or may be remedied easily by a minimum of hand working when the forms are removed. The wedge shape of the cavities formed by plates 19 and 20 with wall 14 permits the use of varying thicknesses of form boards without requiring different connectors. Also, the distance between the longitudinal flanges 17 and 18 is large enough to accommodate various widths of form boards and the variance from the nominal width of each form board. The absence of a necessity for any nailing or special fixture on the end of each form board maximizes the useful life thereof, thereby minimizing the cost of forming.

Having fully described my invention, it is to be understood that I do not wish to be limited to the details herein set forth or to the details illustrated in the drawings, but my invention is of the full scope of the appended claims.

I claim:

1. An apparatus for connecting the ends of two form boards, comprised of a housing having a relatively flat wall with two longitudinal edges, a flange along each of said edges, a pair of plates extending between and mounted on said flanges, each plate being positioned at an angle with said wall whereby the said wall, the said flanges and each of the said plates define an opening, a form board inserted in each said opening in a direction parallel to the said wall edges, and each said plate converging toward said wall for engaging and urging the end of the associated form board toward said wall and for limiting the distance of longitudinal movement of the form board into such opening.

2. An apparatus for connecting the ends of two form boards, comprised of a housing having a relatively flat wall with two longitudinal edges, a flange along each of said edges, a pair of plates extending between and mounted on said flanges, each plate being positioned at an angle with said wall whereby the said wall, the said flanges and each of the said plates define an opening, a form board inserted in each said opening in a direction parallel to the said wall edges, each said plate converging toward said wall for engaging and urging the end of the associated form board toward said wall and for limiting the distance of longitudinal movement of the form board into such opening, and a wedge removably inserted between each form board and each said plate.

3. The apparatus of claim 2 wherein the wedge angle is greater than the angle formed between the said wall and each said plate.

4. In an apparatus for connecting the ends of form boards together in a continuously curved form for receiving concrete or the like, the combination of: a housing having a pair of wedge shaped cavities, each of said cavities having two sides converging at a relatively small angle to form the wedge shape, one of said converging sides of one cavity joining and being in the same plane as one of said converging sides of the other cavity, each of said cavities having a large end and a small end, the said small ends of the cavities being adjacent, the said large end of each cavity being open and remote from the large end of the other cavity, and a form board inserted into each said cavity through said large end and having an end portion engaging said converging sides to firmly retain the form board within the cavity.

5. In an apparatus for connecting the ends of form boards together in a continuously curved form for receiving concrete or the like, the combination of: a housing having a pair of wedge shaped cavities, each of said cavities having two sides converging at a relatively small angle to form the wedge shape, one of said converging sides of one cavity joining and being in the same plane as one of said converging sides of the other cavity, each of said cavities having a large end and a small end, the said small ends of the cavities being adjacent, the said large end of each cavity being open and remote from the large end of the other cavity, a form board inserted into each said cavity through said large end and having an end portion engaging said converging sides to firmly retain the form board within the cavity, and a wedge insertable in each of said cavities between the form board and one of said converging sides.

6. The apparatus of claim 5 wherein the wedge angle is greater than the angle formed by the converging sides of each cavity.

7. In an apparatus for connecting the ends of form boards together in a continuously curved form for receiving concrete or the like, the combination of: a housing having a pair of wedge shaped cavities, each of said cavities having two sides converging at a relatively small angle to form the wedge shape, each of said cavities having a large end and a small end, the said small ends of the cavities being adjacent, the said large end of each cavity being open and remote from the large end of the other cavity, and a form board inserted into each said cavity through said large end and having an end portion engaging said converging sides to firmly retain the form board within the cavity.

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