

1

2,953,835

CORNER FORMER FOR POURED CONCRETE

Harris Armstrong, 180 S. Sappington Road, Kirkwood 22, Mo.; and Jacob Van Dyke and Theodore N. Kohler, Kirkwood, Mo.; said Van Dyke and said Kohler assignors to said Armstrong

Filed Oct. 17, 1956, Ser. No. 616,440

3 Claims. (Cl. 25—118)

This invention relates to corner formers, and with regard to certain more specific features, to corner fillets for use in forms for poured concrete.

Among the several objects of the invention may be noted the provision of a flexible self-sealing fillet for use in corners of polygonal poured-concrete forms, adapted to produce smoothly formed decorative corners with a minimum of corner blemishes in the ultimate concrete structure; the provision of a corner former of the class described which may be quickly and accurately applied during the erection of concrete forms and which will positively maintain its accurate position prior to and during the pouring of concrete; the provision of a former of the class described which, upon complete or partial demolition of a form, may, for at least a number of occasions, be re-used, either completely or with convenient replacement of damaged sections; and the provision of such a form which is substantially tough and moistureproof, so as to withstand rough handling, and which is applicable to various poor surface conditions of lumber, e.g., wet, lubricated or the like. Other objects and features will be in part apparent and in part pointed out hereinafter.

The invention accordingly comprises the constructions hereinafter described, the scope of the invention being indicated in the following claims.

In the accompanying drawings, in which one of various possible embodiments of the invention is illustrated,

Fig. 1 is a perspective view of a corner-forming strip made according to the invention;

Fig. 2 is a cross section taken on line 2—2 of Fig. 1;

Fig. 3 is a broken cross section of two form boards in an intermediate stage of erection and showing the application of four corner formers;

Fig. 4 is a broken-away cross section similar to Fig. 3 but showing a completed form including corner formers, into which concrete has been poured; and,

Fig. 5 is a cross section on a reduced scale, showing a finished concrete structural member with rounded corners produced by the corner former of the invention.

Corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

Corner filleting in poured-concrete forms has heretofore been unsatisfactory as accomplished by conventional methods, such as, for example, nailing into the corners triangular wooden strips and the like. These have been unsatisfactory because of the high cost of application, their inaccuracies, and their inability to prevent marginal leakage with resulting blemishes in the ultimate structural members. Their high cost was also augmented by the necessity of removing the blemishes. After placement of the fillets, which was difficult (particularly in forms awkward of access) they tended to splinter, warp and the like, which accentuated their disadvantages, not only upon original use but re-use. By means of the present invention, the objects above stated are accomplished without the stated disadvantages.

Referring now more particularly to Fig. 1, there is shown at numeral 1 a strip constituted by an extrusion of

2

a suitable known flexible plastic such as for example, a plasticized polyvinyl chloride which after extrusion is homogeneous, flexible, resilient, and deformable and adapted to be readily pierced and severed by cutting, like rubber.

The homogeneous characteristic avoids splitting and splaying. Other materials may also be used for the purpose such as, for example, rubber itself, or an artificial rubber such as the one known to trade as neoprene. Forming may also be accomplished by means other than extrusion, as is known.

In any event, a desirable characteristic of the strip is flexibility and severability by cutting in the finished strip. The strip is made in substantial lengths designed to fillet long corner runs with a minimum number of butts between strip lengths. For runs shorter than the strips, the long strips may be cut. The strip may also be cut for the purpose of removing damaged sections and splicing in short repair lengths.

Referring now more particularly to Fig. 2, the shape of the strip in cross section is seen to comprise preferably substantially right-angular, approximately flat outer walls 3 and 5, the outer end or marginal portions 11 and 13 of which are curved outward relative to the angle between the walls. If the angled outer wall surfaces 3 and 5 are projected a point P is established. The end portions 11 and 13 are feather edged, as shown at 7 and 9 respectively. The feather edges or ends 7 and 9 subtend an angle substantially greater than 90° with reference to an apex at point P, where the two angled walls 3 and 5 would intersect upon projection of their outer surfaces. The feather edges are joined by an oblique, re-entrant trough-like surface 15. The walls 3 and 5 approach one another at a corner region 17 at which is formed a semi-circular relief slot or channel 19, in one wall 3. This relief slot accommodates any inaccuracies at the corner of a board with which the wall engages. Adjacent the slot 19 and extending from the corner portion 17, and extending from the general plane of the wall 5, is an integral fastening means 21. This is in the form of an integral ribbon or ribbon-like extension, one side (inside) of which is longitudinally ribbed, as shown at 23, and the other side (outside) of which is longitudinally grooved, as shown at 25. By the terms ribbon or ribbon-like is meant fastening means 21 which is substantially wider in its extension from surface 5 than the extension is thick in the direction of wall 3.

Application of the strip as a corner former is illustrated in Figs. 3 and 4. In Fig. 3 are shown two form boards 27 and 29. To apply a strip, for example, it is gripped between fingers adjacent to margin 9 and pushed angularly against the corner of the board. This locates the ribbon 21 flatwise against the outside edge of the board. Pressure due to application straightens the outwardly curved margin 11, so that it is flush with the wall 3, the feather edge 7 forming a smooth transition from the re-entrant surface 15 to the inside plane of the board 27 or 29. While maintaining the holding pressure, the ribbon 21 is preliminarily stapled or otherwise anchored or attached to the edge of the board. This may be accomplished by means of staples, shown for example at 31, driven into the groove 25 as by means of a staple gun, or by means of brads, tacks or the like. The head portions of these become countersunk in the groove 25. All means such as 31 may be referred to as tacking means. The ribs 23 aid in maintaining a nonslip grip between the ribbon 21 and the board edge while stapling, so as to minimize disarray of the feather edge 7 in its tangential position against the inner face of the board. The slot 19 prevents any rough spots on the corner of the board from misaligning the strip. Since any given strip may be rotated around its length and turned

end for end, one and the same form of strip may be applied to each of the four corners of two boards, as illustrated in Fig. 3.

Next it is assumed that the two form boards 27 and 29 are properly positioned, as shown in Fig. 4, for application by lapping of two additional form boards 33 and 35, in order to complete a polygonal form. These boards 33 and 35 are pressed against the outsides of the ribbons 21. As a result, they push inward the remaining curved marginal portions 13 adjacent the feather edges 9. Since the tops of the staples 31, brads, tacks or the like, are accommodated in the grooves 25, the inner faces of the boards 33 and 35 bridge these fasteners. Construction nails 37 are driven, so as to complete the form. Nails having spaced double heads 39 are shown, to permit ready removal for subsequent demolition of the form, but it will be understood that these are only a convenience and that single-headed nails may be used if desired. The nails are preferably driven at locations other than those of the fasteners such as 31.

The resulting form of Fig. 4 is then filled with poured concrete, appropriate steel reinforcement being used but not shown in Fig. 4, because it would not ordinarily appear close to the corner forms. Such reinforcement is shown at 41 in Fig. 5, which illustrates a cross section of a finished concrete reinforced structural member 43, the corners of which have been formed as described herein.

Disassembly or demolition of the form is accomplished by withdrawing the nails 37 and removing the boards 33 and 35. Then if desired, the remaining boards 27 and 29, to which the corner former strips are attached, may be removed and left as shown in Fig. 3, for re-use in other forms; or, the corner former material may be removed from these boards 27 and 29 for re-use by withdrawing the fasteners such as 31. It is contemplated that in the case of some types of fasteners, such as gun-driven fine wire staples, small brads and the like, the strip may be simply stripped from the board without substantial damage to the ribbon 21, allowing for at least some re-use. It is contemplated that under some circumstances of rough handling on a construction job, either new or old strip material may become damaged, either on or off the board 27 or 29. In either case, the damaged parts may be cut out and repair sections inserted with minimum resulting blemishes, provided clean transverse abutting cuts are made between sections. But even in the case of poor cuts and abutments, the resulting blemishes are minor, since they extend only crosswise and not for long distances lengthwise. Such minor crosswise blemishes can be removed at lower cost by stoning. In any event, the invention avoids the necessity for stoning out blemishes over long distances lengthwise of a formed corner. This is in part due to the fact that the outwardly curved feather edges 7 and 9 flatten out and become tensioned, closely hugging the inner board faces, and form a smooth tangential transition from the re-entrantly shaped surface to the flat shapes provided by the inner board faces. Outward hydrostatic pressure of the wet concrete aids in this result.

It will be understood that the re-entrant surface 15 is so designed that after the flaring margins 11 and 13 are pressed into final position (Fig. 4), the type of curve desired for the corner section is obtained. In the drawings this is a quarter circle. Obviously other shapes at the re-entrant surface 15 and outwardly curved portion 13 may be employed, as for special effects. Ordinarily, however, the quarter round shape is used. It is also preferable that the shape be amenable to the use of the outwardly curved margins 11 and 13, having the feather edges 7 and 9, because these assure a flat tensioned contact at the marginal transition points and a seal against concrete getting under the margins to make blemishes.

While the strip disclosed herein has the right angularly arranged walls 3 and 5, serving most applications, it will

be understood that special strip forms may be employed, in which these walls are other than at right angles for application to special polygonal forms having other than right-angular interior corners.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As various changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

We claim:

1. A corner former for structural-concrete form-board members which members are adapted to be marginally joined by fasteners driven through lapped right-angular corner-forming portions thereof to produce a form; consisting of a homogeneous strip of completely flexible material deformable in cross section having two angled outer walls, the outer end portions of said walls when free consisting of concave portions curving outward and the ends of which subtend an angle substantially greater than 90° with reference to an apex at the point where said two angled walls would intersect upon projection of their outer surfaces, said ends being determined by said outward curving concave portions of the walls and by a surface extending obliquely across said right angle, said oblique surface being re-entrantly curved to provide a central concave trough shape and two convex side shapes joining said outward concave portions respectively to form normally outwardly curved normally free feather edges, and a ribbon-like extension located substantially perpendicularly to one of said walls and having an exterior form-engaging surface substantially in a plane of the other wall and having an interior surface connected by a relief channel with the other one of said walls, whereby when the ribbon-like extension is marginally held by fasteners between connected corner-forming portions of said form-board members, one outward concave portion of each feather edge will become deformed into a substantially flat position in the plane of its adjacent wall and the other convex side thereof will be reversed in its curvature so as to form a continuous completely concave trough-like sectional shape of said oblique surface adapted to form a smooth continuously rounded convex corner on concrete placed in the resulting form, said relief channel being adapted to facilitate accurate contact of said outer walls with said form-board members.

2. A corner former according to claim 1, including at least one external groove in the ribbon-like extension adapted to thin it centrally for the reception of fastener ends below its exterior form-engaging surface and to permit ripping of the corner former from a form to which it is fastened without removal of said fastening means and without substantial destruction of the corner former.

3. A corner former according to claim 1, wherein the interior surface of said ribbon-like extension is provided with longitudinal frictional gripping ribs adapted to assist in holding said ribbon-like means in place during application.

References Cited in the file of this patent

UNITED STATES PATENTS

1,129,658	Foy	Feb. 23, 1915
1,807,315	Knutson	May 26, 1931
1,846,196	Goldsmith	Feb. 23, 1932
2,185,860	McAlpine	Jan. 2, 1940
2,227,581	Henderson	Jan. 7, 1941
2,281,133	Abercrombie	Apr. 28, 1942
2,453,223	Henderson	Nov. 9, 1948
2,495,100	Henderson	Jan. 17, 1950
2,593,456	James	Apr. 22, 1952