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(54) IMPROVEMENTS IN OR RELATING TO TRIM STRIP CARRIERS

(71) We, THE STANDARD PRODUCTS COMPANY, a corporation organised and existing under the laws of the State of Ohio, United States of America, of 2401 South 5 Gulley Road, Dearborn, Michigan 48124, United States of America, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to an improved trim strip or moulding carrier or the like.

According to the present invention there is provided a carrier for an elongated trim strip or moulding of U-shaped cross-section comprising a continuous serpentine wire folded transversely back and forth about longitudinal axes to define laterally extending centre portions joined by reentrantly folded longitudinally extending end portions, the centre portions of said wire being foldable about a pair of spaced longitudinally extending axes to define said U-shaped cross-section, said axes being spaced inwardly from the end portions of said wire an amount sufficient to make the legs substantially equal in length to the bight of the U-shaped cross-section, and a one piece stabilising element of semi-rigid plastics material disposed centrally of and engaging the bight only of the centre portion of said wire, said stabilising element having portions extending between and above and below said wire whereby the centre-portions thereof are positively spaced from one another yet are foldable about said longitudinal axes without requiring folding of the stabilising element. Suitably the carrier can be made by a method comprising the steps of: continuously forming a wire back and forth serpentine fashion in a common plane to provide laterally extending portions joined by reentrantly bent portions, and spacing the laterally extending portions by

applying thereto a plastics material which, in the finished state of the carrier, is semi-rigid, to form the stabilising element and then folding the wire to form the U-section.

The reinforcing element or carrier may comprise a wire of small diameter which is bent back and forth in a common plane to provide laterally extending portions, which may be an inch or more in length, with alternate reverse bends at the side edges of the carrier which permits it to be continuously formed. The plastics material may be applied to the laterally extending portions by advancing the formed wire on a table having a slot therein and a nozzle for delivering a bead of heated plastics material as the formed strip is advanced beneath a roll having a matching slot therein. As the plasticized material is advanced beneath the roll, ribs preferably are formed above and below the laterally extending wire portions. Upon cooling, the plastics material secures the laterally extending portions in fixed relation to each other at the centre of the width of the formed wire. The carrier so formed is flexible as it may be bent along its length and be formed into a U-shaped cross-section while maintaining its flexibility. A flexible plastics or rubber material may be extended over the strip, when flat or when formed into U-shape, to provide a completed windlace or trim.

The invention will be further described, by way of example, with reference to the accompanying drawing, wherein:—

Figure 1 is a plan view of a carrier formed from a single length of wire, the convolutions of which are secured together in a manner to embody the present invention;

Figure 2 is an enlarged sectional view of the structure illustrated in Figure 1, taken on the line 2-2 thereof;

Figure 3 is a sectional view of a flexible

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moulding with the carrier of Figure 1 embedded therein;

Figure 4 is a broken view of one structure which applies a plastics material to the centre of the laterally extending portions of the carrier wire to form the carrier illustrated in Figure 1; and

Figure 5 is a view of structure, similar to that of Figure 4, showing another method of applying the plastics material to the centre of the laterally extending portion of the carrier wire.

In Figure 1, a carrier element 11 comprises a wire 12 which is bent back and forth to provide laterally extending straight portions 13 which are joined at the side edges of the element 11 by alternately reentrantly bent portions 14. The carrier 11 is continuously formed and, as illustrated in Figure 2, has a stabilizing element 15 of semi-rigid plastics material extending across the joining the centre portions of the laterally extending portions thereof. It will be noted that some of the plastics material 15 has been deposited between the portions 13 and 16 and that a top rib 17 and a bottom rib 18 are provided thereon. The portions 16 space the straight portions 13 from each other and maintain them in generally parallel relation. The portions 13 are retained in predetermined relation to each other by the ribs 17 and 18. The plastics material 15 is preferably a flexible polymer, for example, polycarbonate.

The polycarbonate material may be applied in the manner illustrated in Figure 4 wherein a nozzle 21 delivers a bead 22 of the plastics material onto the top of the formed wire strip 12 as it is advanced on a table 23. The table has a recess 24 therein aligned with the advancing bead 22 of plastics material, the strip 12 moving under a roll 25 which has a recess 26 therein aligned with the recess 24 in the table. The strip 12 carries the bead 22 of plastics material therewith at a rate which delivers a predetermined amount of the material under the roll 25 which presses the material between the laterally extending portions 13 of the strip 12 to form the spacing portions 16 and the ribs 17 and 18. Heat may be applied to the table, to the plastics material, to the wire 12 and/or to the roll 25. Enough heat is provided to work and shape the plastics material in a manner to join the portions 13 of the wire 12 in fixed semi-rigid relation, yet provide flexibility to the carrier 11.

In Figure 5 an apparatus is illustrated 60 which produces the same results as the

apparatus of Figure 4. Like plastics strips 27 and 28 are advanced from rolls 29 to the centre of the top and bottom faces of the wire 12 which is disposed therebetween and advanced therewith between a pair of rolls 31. The rolls 31 have aligned recesses 32 therein which force the material of the plastics strips 27 and 28 between the laterally extending portions 13 of the wire 12 to form the spacing portions 16 and the rib portions 17 and 18. In this manner, the strip 11 whether made by the process of Figure 4 or that of Figure 5 is illustrated in Figures 1 and 2.

Various types of trim elements may be reinforced by the carrier 11, a U-shaped garnish moulding 34 being illustrated in Figure 3. In this arrangement, the carrier 11 may be formed into a U-shaped cross-section before or after it is covered by a decorative plastics coating 34 which is extruded thereover. The U-shaped cross-section as shown has been formed by bending the centre portions of the wire about a pair of spaced axes extending longitudinally of the carrier, the axes being spaced inwardly from the reentrantly bent end portions 14 of the wire an amount sufficient to make, as shown, the legs being substantially equal in length to the bight of the U-shaped cross-section. The side portions 35 of the trim 34 are provided with inwardly extending ribs 36 and 37. The ribs 36 and 37 engage a supporting projection and retain the formed trim strip 34 thereon in fixed relation for the purpose of ornamentation, air control, or the like.

#### WHAT WE CLAIM IS:—

1. A carrier for an elongated trim strip or moulding of U-shaped cross-section comprising a continuous serpentine wire folded transversely back and forth about longitudinal axes to define laterally extending centre portions joined by reentrantly folded longitudinally extending end portions, the centre portions of said wire being foldable about a pair of spaced longitudinally extending axes to define said U-shaped cross-section, said axes being spaced inwardly from the end portions of said wire an amount sufficient to make the legs substantially equal in length to the bight of the U-shaped cross-section, and a one piece stabilising element of semi-rigid plastics material disposed centrally of and engaging the bight only of the centre portion of said wire, said stabilising element having portions extending between and above and below said wire whereby the centre-portions thereof are positively spaced from one another yet

are foldable about said longitudinal axes without requiring folding of the stabilising element.

2. A trim strip or moulding which comprises a carrier as claimed in claim 1, together with a coating of plastics material over the combination of serpentine wire and stabilising element.

3. A carrier for a trim strip of moulding constructed and arranged substantially as herein described with reference to and as

illustrated in the accompanying drawings.

4. A trim strip or moulding constructed and arranged substantially as herein described with reference to and as illustrated in the accompanying drawings.

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