April 4, 1939. R. C. SCHEMMEL 2,153,484

COMPOSITE FABRIC BODY SUCH AS CHANNEL RUNWAY, FINISHING WELT, AND THE LIKE

Filed July 2, 1935

Fig. 1.

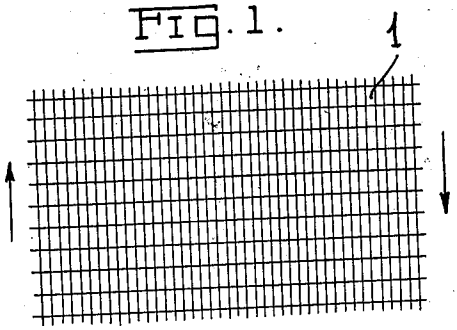


Fig. 2.

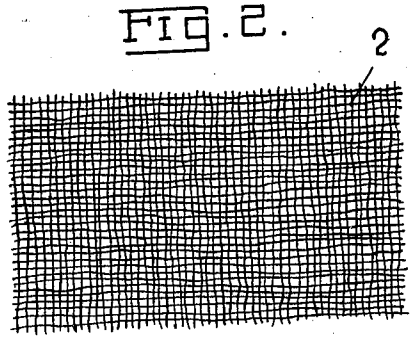


Fig. 3.

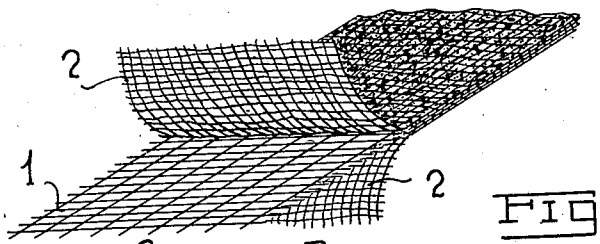
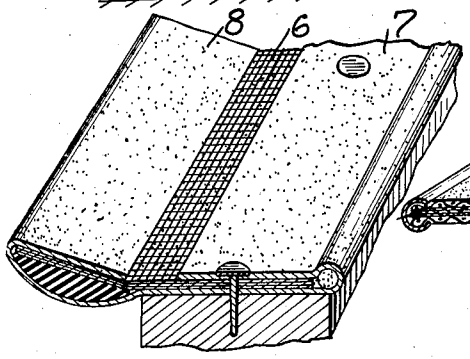


Fig. 4.



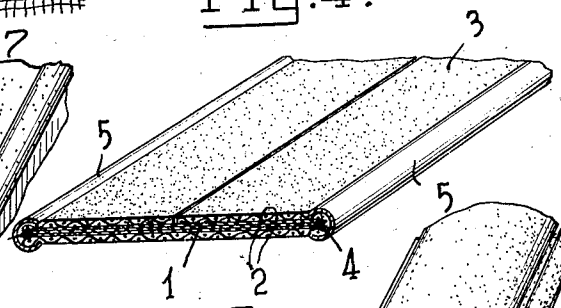


Fig. 5.

Fig. 6.

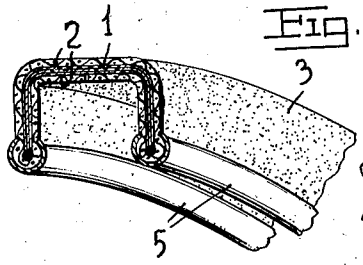
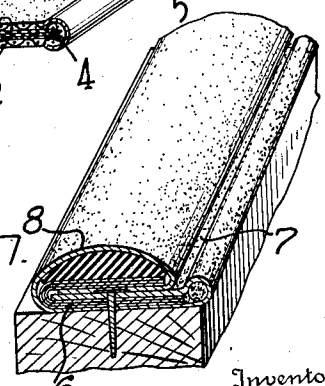


Fig. 7.



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COMPOSITE FABRIC BODY SUCH AS CHANNEL RUNWAY, FINISHING WELT, AND THE LIKE

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Application July 2, 1935, Serial No. 29,558

3 Claims. (Cl. 296—44.5)

My invention relates to automobile body findings such as glass run channels and trimming welts.

More specifically, the invention provides an improvement in automobile body findings which are conveniently manufactured in strips of indefinite length and which are cut to pieces of required length and disposed in curved forms to suit the requirements of the individual installations.

The type of findings to which my invention is primarily applicable comprises laminated bodies including a stiffening, form-maintaining inner ply and an outer ply which constitutes the wear-receiving surface or the ornamental trimming face.

The invention is particularly concerned with the characteristics of the inner, form-maintaining ply, and its combination with the outer ply. The board concept of the combination of outer and inner plies having the above suggested characteristics is not new. It has heretofore been proposed, for example, to provide finishing welts, particularly those of the blind nail type, with an internal stiffening element common to the base and flap to maintain the flap down on the base after the tacking operation. Moreover, the present tendency of automobile designers to provide window and door openings with continuously curved sides and tops, as distinguished from the former strictly rectangular relationship of sides and top, including a 90 degree corner relationship between the top and each side, has made it necessary to provide glass run channels capable of being curved to conform to the new style of opening. In other words, it was formerly customary to provide such channels in the side, strictly vertical, door and window posts only. The channel material was cut to length and terminated abruptly at the top of the door or window. The top of the opening was filled with another cut length of channel or in some cases simply a length of resilient rubber cushion. Now, however, it is necessary to provide a continuous length of channel runway extending up one post, across the top, and down the other post. Manifestly such a channel must be capable of being curved in the plane of the channel sides without material distortion of those sides or the normal cross sectional contour of the channel.

A primary object of the present invention is to provide a channel construction capable of being disposed in such curves without objectionable distortion, yet including a substantial stiffening inner ply. Apparently the best material for the inner ply is metal, and certain attempts have been made to provide a metallic inner ply capable of being curved as indicated without objectionable puckering and buckling. Thus, sheet metal has been used, and transverse slits have been made in the sheet to permit it to open up in the curved portions of the channel. Such constructions have been found objectionable because of their cost and because the opened up length of metal at the curve weakens the whole structure at the curved portion and entails considerable movement of the outer ply with relation to the inner, slitted metal ply. To provide for such movement the inner and outer plies cannot be firmly bonded together, so that the whole structure, even in its straightway portions, is weakened.

In one form of embodiment my present invention provides a channel runway comprising an outer ply of any approved material and an inner ply of metal firmly bonded thereto, unweakened by slits or the like yet inherently capable of being curved without undue distortion.

Trimming welts are applied at various points about an automobile body where curves out of the plane of the transverse axis of the welt must be negotiated. Hence these welts present a similar problem, and my broad combination of an outer ply and my improved inner ply is accordingly advantageously useful in the make-up of such welts.

In the preferred form of embodiment selected for illustration here, the strip comprises the combination of any approved type of outer material and an inner ply formed of wire cloth, having wire in the warp and weft, or at any rate having wire extending longitudinally and transversely of the fabric, and a cloth of fibrous threads cemented to at least one surface of the wire cloth.

Certain preferred types of embodiment of the invention are illustrated by the accompanying drawing, in which,

Figure 1 shows a portion of wire cloth suitable for use in practicing the invention;

Fig. 2 is a similar view of the fibrous thread cloth which I cement to the wire cloth;

Fig. 3 is a perspective view of a strip of inner ply material formed by the association of wire cloth and fibrous thread cloth;

Fig. 4 is a perspective view of a channel runway assembly, prior to being formed in channel shape;

Fig. 5 is a perspective view of a curved portion of the completed channel runway;

Fig. 6 is a perspective view of a finishing welt embodying the invention, shown in open, tacking position; and

Fig. 7 is a similar view of the welt of Fig. 6 shown in closed, installed position.

Referring now to the drawing, reference numeral 1 designates a portion of wire cloth which may be similar to common window screen material. At any rate is it desirable that the cloth embody wires extending both longitudinally and transversely. I have found that such wire cloth constitutes an extremely inexpensive stiffening and form-maintaining medium for the type of strip elements which the invention contemplates. However, it is difficult to manipulate such wire cloth in narrow strips cut from relatively wide sheets, since the absence of a selvage results in free fraying of the edges and loss of individual wires. Furthermore, the weave relation of the crossed wires of such cloth is extremely unstable, so that the wire elements in narrow strips of the cloth freely slide over each other. The cloth has therefore stiffness tending to resist a directly transverse bending operation, but has little resistance to opposite, parallel, co-planar forces along the edges of the strip, indicated by arrows in Fig. 1. Such forces, even when of small value, such as those which are inevitable in handling the cloth, result in skewing the wire elements, destroying the right angular crossing relation of the longitudinal and transverse wires. Such characteristics of the wire cloth militate against its use in a composite article of narrow width.

I have discovered that these objectionable characteristics of the wire cloth can be completely overcome and the wire cloth transformed into an excellent stiffening and form-maintaining medium for channel runways and welts by cementing or otherwise securing to one or both surfaces of the wire cloth a layer or ply of cheap fibrous thread fabric, such as the cheesecloth shown in Fig. 2 and designated 2. In Fig. 3 I show a layer of the latter cloth cemented to each face of the wire cloth. The resulting assembly possesses precisely the right amount of stiffness for the use to which I put it, the assembly is proof against fraying when cut into narrow strips, and it cannot skew under the imposition of forces like those designated by the arrows in Fig. 1. It is of course obvious that the composite fabric provided by the assembly is extremely inexpensive, costing but a fraction of the price of sheet metal, particularly specially formed sheet metal having transverse slits or the like.

I prefer to associate two layers of cheesecloth or the like with the wire cloth, one on each side of the wire cloth, cemented together through the mesh of the wire cloth. The cost of this assembly is so low that the saving which would be effected by using only one layer of cheesecloth is negligible.

With the composite fabric of Fig. 3 as an inner stiffening ply, any approved type of channel or welt may be made. In Fig. 4 I show the inner stiffening ply encased within an outer ply 3 of felt, plush, velvet, or other customary channel outside material. The body thus formed, by cementing the outer material to the inner ply, may include edge wires 4, 4, encased within the folds of any of the plies, to provide edge beads for receiving, in crimped relation, ornamental beading 5, 5, of any soft metal, preferably plated to enhance its appearance and that of the channel. In Fig. 5 I show the body of Fig. 4 formed to channel contour, and incidentally curved to fit the form of a window or door top zone.

In Figs. 6 and 7 I show at 6 a ply of my composite wire and cloth material having a margin enclosed within the base 7 of a finishing welt and its opposite margin secured within the flap 8 of the welt. A substantially central zone of the strip 6 thus bridges the imaginary line where the flap and base meet, to perform the usual stiffening and form-maintaining function of the inner plies heretofore used in welts. The advantage of welts embodying the ply 6 is that they can be readily disposed about transverse curves without objectionable puckering and buckling, in addition of course to the cheapness of the ply 6 and the facility with which it may be handled without fraying and loss of its component wires.

In certain of the appended claims I define the wire ply as "screen" and the attached cloth layer as "cheesecloth". It will be understood of course that these terms are used generically, contemplate all equivalents, and have been adopted because they are common, easily understood names for typical materials which can be used to practice the invention. It is of course by no means necessary that the wire be exactly the type of mesh which is suitable for window screening, or that the associated fibrous cloth be strictly and technically the type properly known as cheesecloth.

In addition to its extremely low cost an important advantage of my new construction is its capacity to be bent or curved in the plane of the window pane, in the case of glass run channels, and in the plane of the base, in the case of welts, without distortion in the form of puckering. I am of the opinion that this failure to pucker is due to the firm bond existing between the inner stiffening ply and the outer ply. These two plies are securely cemented together, because the engaged surfaces of the two plies are of firous material capable of absorbing and holding the cement. In the prior constructions with which I am acquainted the cement was applied to a layer of sheet metal and the resulting bond was necessarily very poor and broke down soon after the cement dried. Consequently my construction is substantially unitary and integral and all parts of it bend and move together where the body is disposed about a curve. In the prior constructions embodying sheet metal the outer ply slipped over the sheet metal inner ply when the body was disposed about a curve so that the excess material of the outer ply became lumped or rippled at the curve. Besides being unsightly these ripples or surface lumps received all the wear and soon frayed through.

I have illustrated the invention in two preferred forms of embodiment only, which comprise the best embodiments now known to me and serve adequately to explain the principles of the invention. I recognize that the invention is of broad application, being useful in and applicable to any type of composite strip element which it is desirable to stiffen and necessary to dispose around a curve. Accordingly I deem within the scope of the invention and that of the appended claims, all such modified embodiments, except insofar as the claims are limited by their express wording and the prior art.

I claim:

1. The method of making an elongated, relatively narrow, striplike body having a longitudinal fold and including a stiffening ply for maintaining said fold which comprises taking a relatively wide sheet of wire screen consisting of woven warp and weft wires unsecured together and therefore subject to ravelling, cementing to a side of said sheet of screen a single sheet only

of cheesecloth of similar shape to provide a composite, flexible, non-ravelling fabric, cutting from the composite fabric a relatively narrow strip, applying to said strip a layer of surfacing material to form the outer, finishing ply of the completed body, and then forming a longitudinal fold in said body.

2. The method of making a glass run channel for automobile windows and the like which comprises taking a relatively wide sheet of wire screen consisting of woven warp and weft wires unsecured together and therefore subject to ravelling, cementing to a side of said sheet of screen a single sheet only of cheesecloth of similar shape to provide a composite, flexible, non-ravelling fabric, cutting from the composite fabric a relatively narrow strip, applying to said strip a layer of glass-engaging material, and forming said product into channel shape.

3. The method of making a glass run channel for automobile windows and the like which comprises cementing a single ply only of cheesecloth to each opposite surface of a relatively wide sheet of wire screen to provide a composite, three ply, flexible, non-ravelling fabric, cutting from the composite fabric a relatively narrow strip, applying to said strip a layer of glass-engaging material, and forming said product into channel shape.

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