

Sept. 30, 1947.

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2,428,006

WINDOW CHANNEL

Filed June 10, 1943

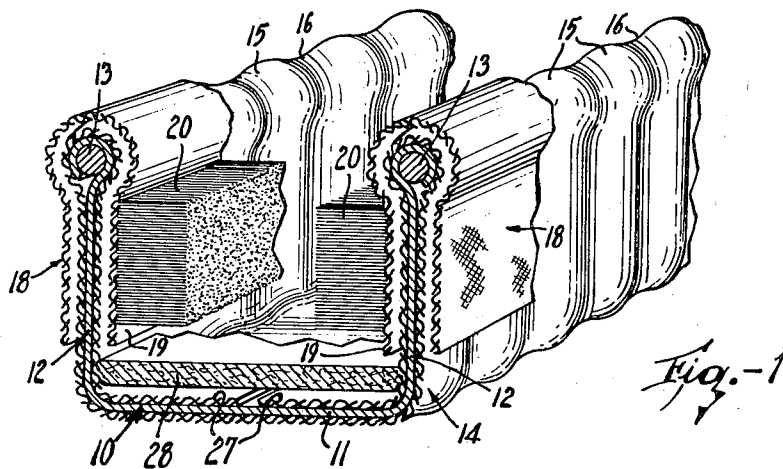


Fig.-1

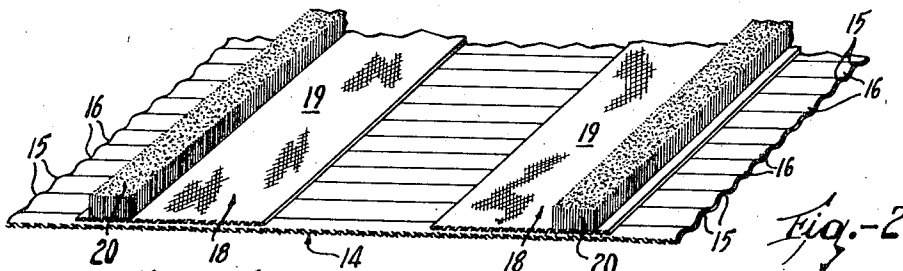


Fig.-2

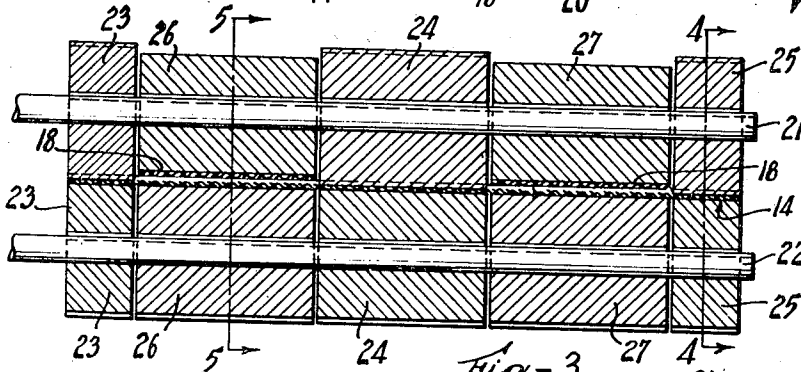


Fig.-3

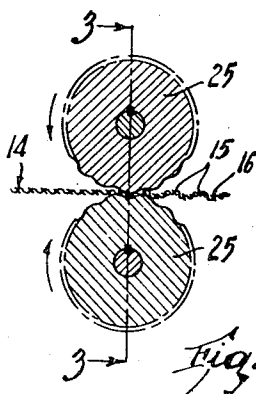


Fig.-4

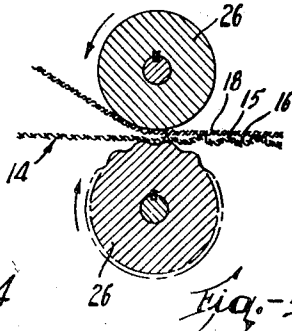


Fig.-5

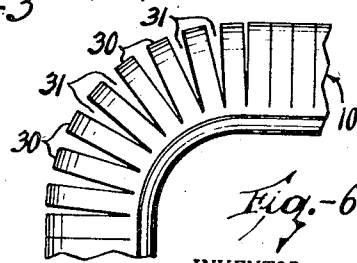


Fig.-6

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2,428,006

WINDOW CHANNEL

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Application June 10, 1943, Serial No. 490,242

7 Claims. (Cl. 296—44.5)

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This invention relates to window channel, such as is used for the reception of the window panes of motor vehicles and the like, and for the guidance of such window panes, if they are edgewise movable. More particularly, the present invention relates to that type of channel consisting of a sheet metal core strip bent to generally U form and covered partly or wholly with an enveloping layer of suitable material, designed not only to protect the underlying sheet metal core strip, but also, to present to the glass pane suitable bearing surfaces. As will hereinafter appear, although the invention here involved embraces the finished channel, it has more particular relation to the cover strip thereof, to the assembly of such cover strip with a core strip, and to method and apparatus for the manufacture of such cover strip.

One object of the invention is to provide an improved channel of the character described, adapted to be bent in the plane of the glass pane which it receives, and which channel includes a cover strip having extra fullness in at least those regions or zones where elongation is necessary, so that upon longitudinal bending of the channel, the cover strip is not torn or the like or detached from the core strip.

Another object of the invention is to provide an improved cover strip of the character described which can be made at low cost, which can be readily applied to a sheet metal core strip, which presents satisfactory bearing surfaces to the window pane, and which permits bending of the channel in the plane of the window pane without liability of tearing of the cover strip or detachment thereof from the metal core strip.

A further object is to provide an improved cover strip of the character described, said cover strip having a body layer which possesses no inherent lengthwise stretch but which is so formed or arranged as to be extensible longitudinally, thereby enabling it to be used in window channel designed or intended to be bent in the plane of the window pane, such as around the rounded corners or other portions of the curved edges of modern automobile window openings.

Still another object is to provide an improved cover strip of the character described, said cover strip having a cross corrugated body layer to which is attached one or more bearing strips for the window pane, the attachment being of such nature as to maintain said corrugations at least to the extent of providing such extra fullness in the body layer as to permit bending of the channel in the plane of the window pane.

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A further object is to provide improved method and apparatus for manufacturing the said cover strip, by which the corrugations in the body layer are formed progressively, and simultaneously therewith one or more bearing strips are secured to the corrugated body layer for the purpose of preserving, as described, the extra fullness in the body layer, all at low cost and by simple and very efficient apparatus.

Further objects of the invention are in part obvious and in part will appear more in detail hereinafter.

In the drawings,

Fig. 1 is an enlarged perspective view, partly broken away, of one form of window channel provided with a cover strip embodying, and made according to, the present invention;

Fig. 2 is a similar view of the finished cover strip before application to the metal core strip;

Fig. 3 is a sectional elevation, on the line 3—3, Fig. 4, through a set of forming rolls for making the cover strip;

Figs. 4 and 5 are cross sectional views, taken respectively on the lines 4—4 and 5—5, Fig. 3; and

Fig. 6 is an elevation of an arcuately bent portion of the metal core strip, the cover strip being omitted.

Before the invention here involved is specially described, it is to be understood that such invention is not limited to the specific details of construction and/or the specific arrangement of parts herein illustrated or described. It also is to be understood that the phraseology or terminology herein employed is for purposes of description and not of limitation, the scope of the invention being denoted by the appended claims.

Referring first to Fig. 1, this view illustrates, more or less conventionally and in somewhat enlarged and exaggerated form, a window channel embodying the present invention. As shown, the window channel consists of a channel-shaped sheet metal core member or core strip 10 having a base or bottom wall 11 and a pair of generally parallel side walls 12, the free longitudinal edges of which are here rolled or bent around reinforcing wires 13. This core member usually is transversely slitted or slotted, or is of open or perforate form, to enable it to be bent in the plane of the window pane which it receives, the core base 11 lying on the outside of the curve and the side walls extending inwardly, as shown in Fig. 6. The core member is covered or is enclosed or enveloped, either partly or wholly, by a cover member designed not only to protect the

core member but also, to present to the lateral faces of the window pane suitable bearing surfaces along which the window pane slides, if it is edgewise movable.

One suitable embodiment of a cover member made according to the present invention is illustrated in Fig. 2, the cover being laid out in the flat or developed form which it takes before attachment to the metal core strip, as shown in Fig. 1. It includes a body member or layer 14 made of any suitable and preferably cheap material, ordinary cheap cotton fabric being here utilized. The use of knit or bias-cut material is wholly unnecessary, because inherent longitudinal stretch or elongation in this body layer is not required, as will hereinafter more fully appear. Accordingly, the warp and woof threads of this body layer may extend parallel to and crosswise of the longitudinal edges thereof, making it possible to form the body layer of long strips cut from a roll of ordinary textile fabric in the usual manner.

However, longitudinal stretch in at least certain zones or regions of the complete cover strip as finally applied to the sheet metal core member of the channel is essential to permit the channel to be bent in the plane of the window pane, as described, without breaking or tearing the cover strip or detaching it from said core member. Such elongation of the body layer is here provided by special form of the cover strip and the method of its manufacture.

As here shown, the body layer 14, of suitable width and of suitable length, is corrugated transversely or crosswise throughout its length. That is to say, the material of the body layer 14 is bent or folded to provide a series of recurrent hills 15 and valleys 16 extending crosswise of and throughout the length of such layer. To maintain the body layer 14 in transversely corrugated form, to thereby enable those portions of such layer which lie along the window channel base and along the window channel side walls adjacent said base to be readily elongated in the lengthwise bending of the channel, use is here made of two bearing strips 18 which, in the finished channel, lie along the inner surfaces of the channel side walls for yielding contact with the lateral faces of the window pane which the channel receives in use thereof.

As here shown, each of the bearing strips 18 is a special pile fabric of the general type disclosed in the Schlegel Patent No. 1,982,074 and comprises a web portion 19 having a row of uncut pile 20 extending longitudinally between its side edges.

While the body layer 14 is in corrugated form, the two bearing strips 18 are lengthwise secured thereto in properly spaced relationship, the securing being effected by the use of an adhesive or other suitable means and the bearing strips functioning to maintain the body layer in corrugated form.

Apparatus for forming the present improved cover strip is shown in Fig. 3 as including a series of paired rolls mounted upon two parallel shafts 21, 22 driven by any suitable mechanism (not shown). In the present instance, there are three pairs of corrugated forming rolls 23, 24 and 25 of like diameter spaced apart lengthwise of the shafts 21, 22 and separated by two pairs of intervening pressure rolls 26, 27. The total length of the five sets of rolls is the total width of the body layer 14 of the cover strip and each pair of the pressure rolls 26, 27 has a length coextensive with the width of a bearing strip 18.

With the rolls rotating in the directions shown by the arrows in Figs. 4 and 5, the body layer 14 is fed between them, the two bearing strips 18 also being fed in above the layer 14 in such positions as to come between the pressure rolls 26, 27. A suitable adhesive (not shown) is supplied in advance either to the lower surfaces of the bearing strips 18 or to those portions of the upper surface of the body layer 18 which the bearing strips overlies. Where the body layer encounters the corrugated rolls 23, 24, 25, those rolls intergear or are so close together as to form the material between them into corrugations, and necessarily those corrugations continue across the intervening spaces occupied by the pressure rolls 26, 27. As to these pressure rolls, both may be smooth but preferably, as shown in Fig. 5, the lower one of each pair is corrugated, like the rolls 23, 24 and 25. Their arrangement and relative spacing presses the bearing strips 18 and the body layer 14 closely together without appreciably disturbing the corrugations of the body layer, and thus accomplishes attachment of the two bearing strips 18 to the body layer 14. The channel cover as it leaves the rolls travels over any suitable support or is coiled or otherwise held for a sufficient time to permit the adhesive to dry so that the attachment becomes substantially permanent.

It should be noted that in the two rows 20 of pile material, the pile, though relatively high, is quite soft and flexible and hence flattens down as the bearing strips pass through the rolls, so that such pile to all intents and purposes is of negligible thickness and therefore is not shown in Figs. 3, 4 and 5.

For the formation of the window channel, the cover strip is applied to the sheet metal core member either while such member is in flat form or after it is bent to channel shape, or the application of the cover strip and the bending of the core member may be progressive as the two move along together. In the present instance, the cover strip is disposed as shown in Fig. 1, with its two longitudinal edges 27 adjacent each other and lying within the channel and on its bottom. The two bearing strips 18 are located adjacent the free longitudinal edge portions of the window channel, the pile 20 of each such bearing strip extending inwardly for cushioning engagement with the window pane which the channel receives in use thereof. Preferably and as here shown, a strip 28 of lengthwise extensible felt or other suitable material is arranged in the bottom of the channel and hence overlies the free longitudinal edges of the channel cover strip. If desired, an adhesive may be used to secure the channel cover strip in assembled relation with the sheet metal channel core member and to secure the channel bottom strip 28 in place, the adhesive being of such character, however, as to permit elongation of the corrugated cover strip along the base of the channel when the channel is longitudinally bent. When so bent, the channel core member takes the form shown in Fig. 6, the cross straps 30 between the slots 31 moving farther apart on the outside of the curve and thus in effect, lengthening the channel base. The securing of the bearing strips 18 to the corrugated body layer 14 of the channel covering thus do not prevent lengthwise extension of such body layer along the channel base, the bearing strips being located adjacent the free longitudinal edge portions of the channel side walls where extension of the channel covering is unnecessary. The provision of the

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transverse corrugations in the body layer of the channel covering affords the extra fullness for the elongation of the channel covering along the base of the channel, so that the material of said body layer need not be of inherently extensible character.

To those skilled in the art, other features and advantages of the present invention will be evident from the foregoing description thereof.

What I claim is:

1. A cover strip for an elongated window channel core of the type which is of channel-shaped cross section with a base and a pair of side walls and which core is capable of being longitudinally bent in the plane of the window pane which the core receives in use thereof, said cover strip comprising an elongated layer of flexible textile material provided with transverse corrugations, and two laterally spaced means extending longitudinally of said layer and attached to the corrugations thereof for the maintenance, pending longitudinal bending of the core after application of the cover strip thereto, of those corrugations of the layer which extend between such two laterally spaced means, said two means being spaced apart a distance greater than the width of the core base and at least portions of the corrugations between said two means being disposed across said core base upon the application of the cover strip to the core, whereby when the core is longitudinally bent, after application of the cover strip thereto, the corrugations extending across the core base are capable of flattening out for the necessary elongation of that portion of said layer which is along the core base.

2. A cover strip for an elongated window channel core of the type which is of channel-shaped cross section with a base and a pair of side walls and which core is capable of being longitudinally bent in the plane of the window pane which the core receives in use thereof, said cover strip comprising an elongated layer of flexible textile material of substantially no inherent longitudinal extensibility, said layer being provided with transverse corrugations, and two laterally spaced means extending longitudinally of said layer and attached to the corrugations thereof for the maintenance, pending longitudinal bending of the core after application of the cover strip thereto, of those corrugations of the layer which extend between such two laterally spaced means, said two means being spaced apart a distance greater than the width of the core base, at least portions of the corrugations between said two means being disposed across said core base upon the application of the cover strip to the core, whereby when the core is longitudinally bent, after application of the cover strip thereto, the corrugations extending across the core base are capable of flattening out for the necessary elongation of that portion of said layer which is along the core base.

3. A cover strip for an elongated window channel core of the type which is of channel-shaped cross section with a base and a pair of side walls and which core is capable of being longitudinally bent in the plane of the window pane which the core receives in use thereof, said cover strip comprising an elongated layer of flexible textile material of substantially no inherent longitudinal extensibility, said layer being provided with transverse corrugations, and two laterally spaced means extending longitudinally of said layer and attached to the corrugations thereof for the maintenance, pending longitudinal bending of the

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core after application of the cover strip thereto, of those corrugations of the layer which extend between such two laterally spaced means, said two means having substantially no longitudinal extensibility and being spaced apart a distance greater than the width of the core base, at least portions of the corrugations between said two means being disposed across said core base upon the application of the cover strip to the core, whereby when the core is longitudinally bent, after application of the cover strip thereto, the corrugations extending across the core base are capable of flattening out for the necessary elongation of that portion of said layer which is along the core base.

4. A cover strip for an elongated window channel core of the type which is of channel-shaped cross section with a base and a pair of side walls and which core is capable of being longitudinally bent in the plane of the window pane which the core receives in use thereof, said cover strip comprising an elongated layer of flexible textile material provided with transverse corrugations, and two laterally spaced bearing strips extending longitudinally of said layer and attached to the corrugations thereof for the maintenance, pending longitudinal bending of the core after application of the cover strip thereto, of those corrugations of the layer which extend between such bearing strips, said bearing strips being spaced apart a distance greater than the width of the core base and the width of each of the two core side walls, so that upon application of the cover strip to the core, the bearing strips lie along the inner surfaces of the core side walls for contact with the window pane which the core receives in use thereof, and the corrugations between said bearing strips extend across the outer surfaces of the core base and core side walls, whereby when the core is longitudinally bent, after application of the cover strip thereto, the corrugations extending across the core base are capable of flattening out for the necessary elongation of that portion of said layer which is along the core base.

5. A window channel, comprising an elongated core of channel-shaped cross section having a base and a pair of side walls, and longitudinally bendable in the plane of the window pane which the window channel receives in use thereof, and a core covering comprising a strip of flexible textile material provided with transverse corrugations extending across the core base and across at least portions of the core side walls, and two laterally spaced elongated means secured to the corrugations of said covering strip, one such means lying alongside each of the core side walls and maintaining in corrugated form, pending longitudinal bending of the core, that portion of the covering strip which lies along the core base, the flattening out of the covering strip corrugations which extend across the core base providing, when the core is longitudinally bent, the necessary elongation of that portion of the covering strip which lies along the core base.

6. A window channel, comprising an elongated core of channel-shaped cross section having a base and a pair of side walls and longitudinally bendable in the plane of the window pane which the window channel receives in use thereof, and a core covering comprising a strip of flexible textile material having substantially no longitudinal extensibility and provided with transverse corrugations extending across the core base and across at least portions of the core side walls, and two

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laterally spaced strip members having substantially no longitudinal extensibility secured to the corrugations of said covering strip, one such strip member lying alongside each of the core side walls and maintaining in corrugated form, pending longitudinal bending of the core, that portion of the covering strip which lies along the core base, the flattening out of the covering strip corrugations which extend across the core base providing, when the core is longitudinally bent, the necessary elongation of that portion of the covering strip which lies along the core base.

7. A window channel, comprising an elongated core of channel-shaped cross section having a base and a pair of side walls and longitudinally bendable in the plane of the window pane which the window channel receives in use thereof, and a core covering comprising a strip of flexible textile material provided with transverse corrugations extending across the outer surface of the core base and across the outer surfaces of the core side walls and across at least portions of the inner surfaces of the core side walls, and two laterally spaced bearing strips secured to the corrugations of said covering strip, one such bearing strip lying alongside the inner surface of each of the core side walls for bearing contact with the window pane which the window channel re-

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ceives in use thereof, said bearing strips maintaining in corrugated form, pending longitudinal bending of the core, that portion of the covering strip which lies along the core base, the flattening out of the covering strip corrugations which extend across the core base providing, when the core is longitudinally bent, the necessary elongation of that portion of the covering strip which lies along the core base.

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