Oct. 30, 1934. C. P. SCHLEGEL 1,978,438

WINDOW CHANNEL

Filed Oct. 26, 1933

Fig. 1

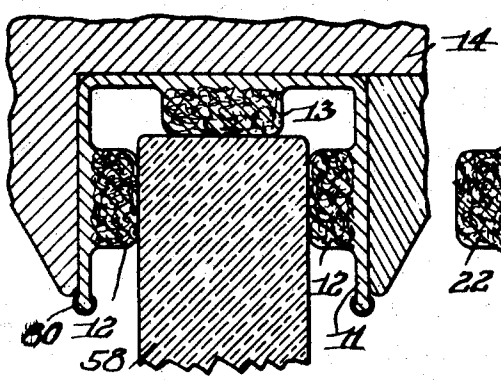


Fig. 2

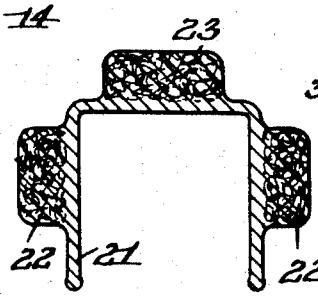


Fig. 3

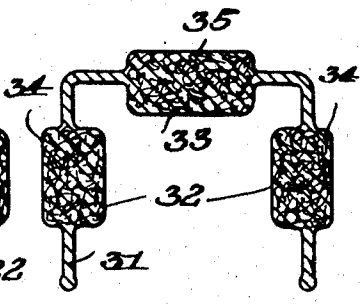


Fig. 7

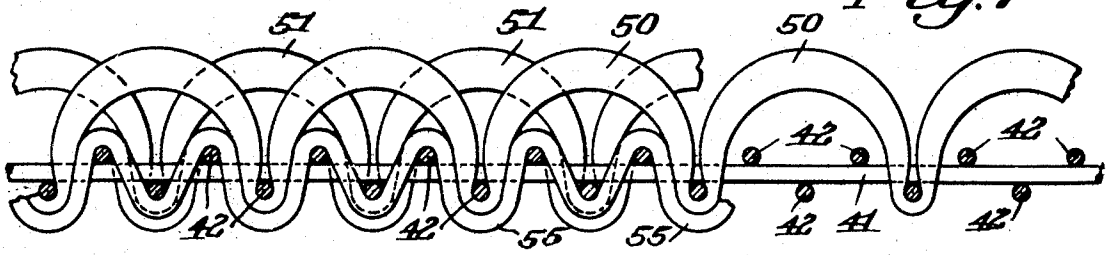


Fig. 8

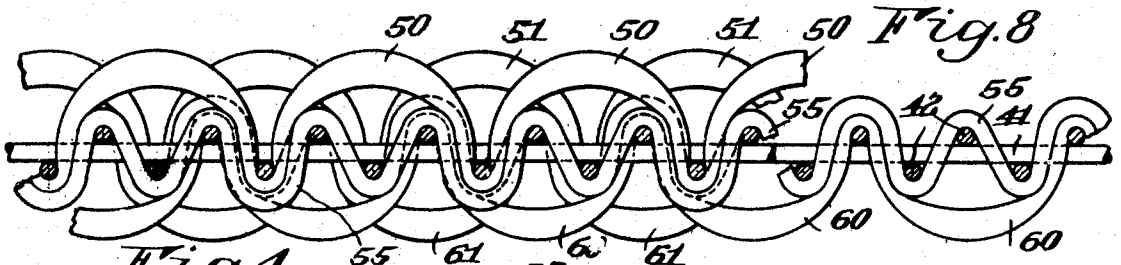


Fig. 4

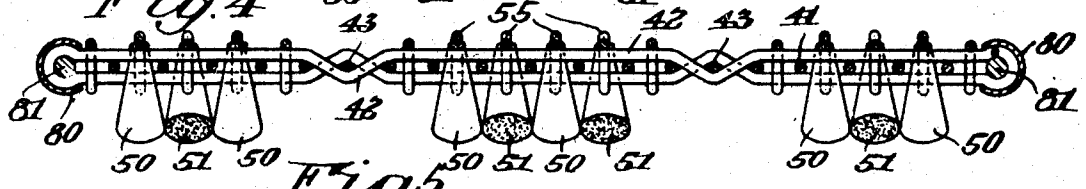


Fig. 5

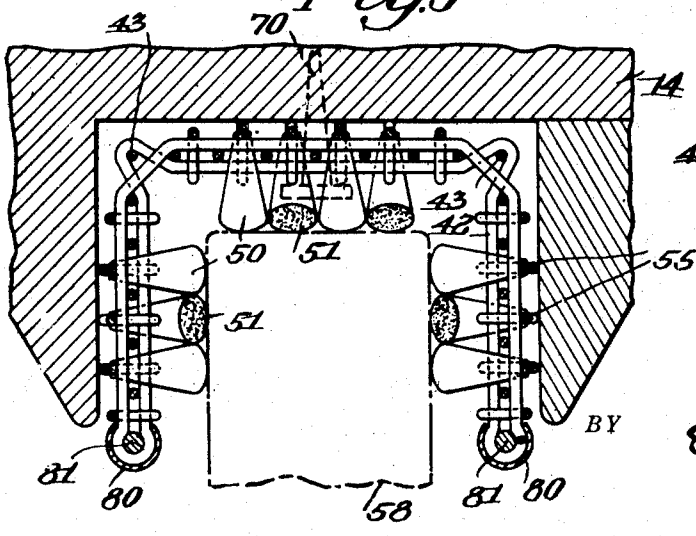
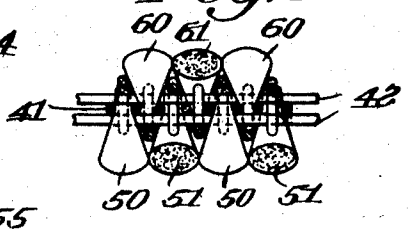


Fig. 6



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WINDOW CHANNEL

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Application October 26, 1933, Serial No. 695,341

11 Claims. (Cl. 296—44.5)

This invention relates to channels such as are used for mounting a window, whether it be of the fixed or movable variety, such channels being useful in holding the windows of vehicles, such as automobiles, aeroplanes, motorboats, and the like.

An object of the invention is the provision of a generally improved and more satisfactory window channel which can be economically constructed, which is substantially self-supporting under normal conditions of use, and which can be readily bent both from flat form to a substantially channel-shaped or U-shaped cross section, and also from straight form to curved form, as for example around a corner of a window embraced by the channel.

Another object is the provision of such a channel having cushioning elements or pads on the outer or exterior surface of the channel rather than in the conventional interior position.

A further object is the provision of such a channel having cushioning elements or pads on both its inner and outer surfaces.

To these and other ends the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawing:

Fig. 1 is a diagrammatic cross section through a window channel constructed in accordance with a preferred embodiment of the invention, illustrating it mounted in a window frame and showing a window mounted in the channel;

Fig. 2 is a diagrammatic cross section through a window channel of a slightly different form;

Fig. 3 is a similar view of a third form of channel;

Fig. 4 is a diagrammatic cross section on a larger scale of the channel of the form shown in Fig. 1, illustrating it flattened out substantially into a plane;

Fig. 5 is a view of the channel shown in Fig. 4 bent up into channel-shaped cross section and applied in normal operating position to a window frame;

Fig. 6 is a view similar to a portion of Fig. 4, illustrating some details of construction of the modified form of channel shown in Fig. 3;

Fig. 7 is a diagrammatic section longitudinally through a channel of the form shown in Figs. 1 or 2, illustrating some of the details of the weave, and

Fig. 8 is a similar view through the channel shown in Fig. 3, illustrating some of the details of the weave.

The same reference numerals throughout the several views indicate the same parts.

The conventional window channel heretofore commonly used for holding fixed or movable windows or glasses in vehicles is a channel having a sheet metal backing member of channel-shaped or U-shaped cross section, and a cushioning lining in this sheet metal backing member. As heretofore constructed, the sheet metal nature of the backing member has made it practically impossible to ship the channels from the factory in flat form and to bend them up into channel-shaped cross section when needed for use, although the ability to bend the channels readily at the place where they are to be used would be extremely desirable and would result in considerable savings in packing and shipping the channels.

Another disadvantage of the prior channels which include a sheet metal member, is that it has been difficult to bend them longitudinally, as for example, around the corners of a window embraced by the channel. In some instances, grooves or cuts have been made in the sheet metal to allow such longitudinal bending, but this increases the cost of the channel and may be unsatisfactory for other reasons.

According to the present invention, there is provided a channel which can be readily bent both transversely and longitudinally, and yet which is sufficiently stiff to retain its intended shape under normal conditions of use, after once it has been bent to the desired shape. This means that the channel of the present invention can be shipped from the factory in substantially flat form, as indicated for example in Fig. 4 of the drawing, and when it is desired to use it, it may be erected or bent up into the desired channel-shaped or U-shaped cross section on such as shown, for example, in Figs. 1, 2, 3, and 5 of the drawing, which bending may be accomplished easily and without any complicated machinery or great labor. Furthermore, if it is desired to run the channel continuously around two sides of a window or glass, it may be readily bent longitudinally, that is, around the corner of the window embraced or to be embraced by the channel, notwithstanding the fact that it has been previously erected into channel-shaped cross section. Along with these advantages of easy bendability in the desired directions, the channel provides adequate padding or cushioning support for the window and yet is comparatively inexpensive, being of lower cost and easier to manufacture than many of the prior

channels which have been proposed or placed on the market.

In its preferred form, the channel of the present invention comprises what may be called a foundation weave or body, and cushioning elements or pads woven onto and integrally connected with the foundation weave. The foundation weave itself is sufficiently stiff to be substantially self-supporting and to maintain its desired shape when once it has been formed to the intended shape, yet it is sufficiently flexible so that it may be readily bent either transversely or longitudinally when desired. The cushioning elements or pads may be arranged either on the inside of the foundation weave or on the outside thereof or partly on the inside and partly on the outside, as may be preferred under the circumstances of use.

Referring now to the drawing, there is shown diagrammatically in Fig. 1 a channel comprising a foundation weave 11 having cushioning elements or pads 12 on the inner faces of its side walls and a cushioning element or pad 13 on the inner face of its base or bottom wall. The window channel, as well understood by those skilled in the art, is usually mounted in a groove or rabbet of a window frame indicated diagrammatically at 14.

In Fig. 2 there is shown a slightly different form of channel in which the foundation weave 21 has cushioning elements or pads 22 mounted this time on the outer faces of its side walls, and a cushioning element or pad 23 on the outer face of its base or bottom wall.

Still another form shown in Fig. 3 comprises a foundation weave 31, cushioning elements 32 and 33, on the inner faces of its side and bottom walls respectively, and also cushioning elements 34 and 35 on the outer faces of its side and bottom walls respectively.

The foundation weave itself, in order to have the requisite stiffness and at the same time the necessary flexibility for bending both longitudinally and transversely, may comprise a textile body woven in part from reinforcing strands of metallic wire. Preferably the foundation weave has weft strands partly or wholly of metallic wire, and warp strands partly or wholly of non-metallic material, such as cotton, linen, or the like. Such a foundation weave is disclosed in my copending application for patent on Window channel, Serial No. 660,402, filed March 11, 1933. It may comprise warp strands 41 as indicated diagrammatically in the drawing, preferably of cotton or other suitable non-metallic material, and weft strands 42 preferably of metallic wire. Alternating weft strands 42 may lie on the opposite sides of the warp strands 41 as indicated diagrammatically in Figs. 4 and 7. At points corresponding to the corners at which the channel is to be bent up into channel-shaped cross section the foundation may be weakened to enable easy and more accurate bending along the desired lines, as for example by crossing the metallic weft strands 42 over each other and holding them crossed by a warp strand 43, which may be referred to as a corner warp since it is located substantially at the corner of the channel.

Interwoven with this foundation weave are the padding or cushioning elements each formed preferably by a plurality of cushioning strands running lengthwise of the channel and conveniently referred to as cushioning warp strands. These cushioning warp strands are of any suitable material such as cotton or linen, preferably of relatively soft texture and large diameter, and run along the channel in a group closely adjacent each other side by side so that the various strands of the group collectively form a pad of the desired size. The cushioning strands may be woven and arranged, for example, in the manner disclosed in my co-pending application for patent on Window channels, Serial No. 595,352, filed February 26, 1932.

One of the strands of the cushioning warp is indicated diagrammatically in Fig. 7 at 50, and another similar strand along side of the strand 50 is indicated at 51. As best shown in this drawing, each cushioning strand is caught under spaced weft strands 42 of the foundation weave and between these points at which it is caught under the weft strands, it extends over a plurality of weft strands to form a long loop lying on the surface of the foundation weave. As shown in Fig. 7 each cushioning warp strand extends over three weft strands 42, then under one weft strand, then over three more, and so on, but the number of weft strands over which it extends at each loop can obviously be varied at will. Cushioning strands which lie next to each other are preferably staggered with respect to each other, so that, for example, the free loop of the strand 50 is opposite the part of the strand 51 which extends under the weft strand 42, and vice versa.

In order to hold the cushioning warp properly engaged with the foundation weave, retaining warp strands 55 may be included in the foundation weave, running back and forth alternately around the weft strands 42 as plainly shown in the drawing. The strands 55 hold the strands 42 against the warp strands 41 and also press against the cushioning warp strands 50 and 51 to hold them in proper position where they bend around the weft strands 42, all as will be plainly apparent to those skilled in the art from the diagrammatic showing in Fig. 7.

When the channel is woven in this manner the cushioning strands 50 and 51 form lines of soft resilient padding which may lie on either surface of the foundation weave. For example, as in Fig. 1, the pads may be on the inside of the foundation weave, or as in Fig. 2 they may be on the outside. Any number or arrangement of pads may be used, but preferably pads are provided at three points, one on each side wall and one on the base or bottom wall of the channel, whether they be on the inner surfaces or on the outer surfaces of these walls. The pads are of any desired width, formed of any desired number of cushioning strands lying side by side, and preferably they are somewhat narrower than the widths of the respective walls to which they are attached, so that spaces are left between the pads adjacent the corners of the channel as plainly indicated in the drawings. Thus the pads do not interfere in any way with the bending up of the channel from flat form to U-shaped form, but they do provide cushioning at the points where cushioning is desired.

It will be seen that whether the pads are arranged on the inside of the channel as in Fig. 1, or on the outside of the channel as in Fig. 2, they nevertheless may be described as pads for cushioning the window. In the former case the window glass may come in direct contact with the pads, such a glass being indicated at 58 in Figs. 1 and 5. If the pads are arranged on the outside as in Fig. 2, the glass may come in contact with the foundation weave rather than with the pads,

but the pads nevertheless furnish a cushioning support for the glass because they are interposed between the foundation weave and the groove or rabbet in which the channel is placed, thus cushioning the foundation weave so that the whole weave is somewhat resiliently supported to form a cushion for the glass.

It is sometimes desired, as indicated in Fig. 3, to have the pads both on the inner and on the outer surfaces of the foundation weave. If this is preferred, the requisite cushioning warp strands 50 and 51 may be provided as before to furnish a pad on one side of the foundation weave, as indicated in Figs. 6 and 8, and other cushioning strands 60 and 61 of somewhat similar nature may be employed to provide a pad on the opposite surface of the foundation weave. The strands 60 and 61 may, like the strands 50 and 51, extend under one weft strand 42 and then form a loop passing over a plurality of such weft strands, then under another weft strand, and over a plurality of them, and so on, just as in the case of the cushioning weft strands 50 and 51, above described. The strands may be held in place by retaining warp strands 55 as before.

When pads are formed on both sides of the foundation weave instead of merely on one side, each pad may conveniently be of less thickness, and consequently the strands 50, 51, 60, and 61 in the modified form in Fig. 8 may be of smaller diameter than the strands 50 and 51 in Fig. 7. Furthermore, it is not necessary that the pads be of equal thickness on both sides and the strands 60 and 61 may be still smaller than the strands 50 and 51, as is apparent in Fig. 8.

In use, the channel may be conveniently shipped from the factory in flat form as illustrated in Fig. 4, and when it is to be used it may be readily bent up into U-shaped or channel-shaped form as in Figs. 1, 2, 3, and 5. After being bent into channel-shaped form it may also be bent longitudinally around the corners of the window or window frame if desired, for the weft strands 42 of wire are preferably spaced a slight distance apart, so that these wires may crowd together along the inner edge of a curve and will not cause puckering or interfere with easy and smooth bending of the channel. The channel is placed in the groove or rabbet of the frame 14 as indicated in Figs. 1 and 5, and is held therein by any suitable means such as by tacks 70 driven at intervals through the base or back wall of the channel. Because of the stiffness imparted by the metallic weft strands 42, the channel will maintain its shape under normal conditions of use and its side walls will hold themselves substantially parallel to each other in proper contact with the sides of the groove or rabbet, without collapsing inwardly as would be the case if the channel did not have sufficient transverse stiffness. Because of these characteristics and the ability to hold itself in proper shape in the groove or rabbet when supported merely by tacks driven through its base, the channel may be described as self-supporting in contradistinction to prior channels which have had to be attached along their side walls or outer edges either to the groove or rabbet or to an embracing sheet metal member.

Whenever desired, and especially when the outer edges of the channel are exposed to view, finishing and reinforcing beads 80 may be employed on one or both edges of the channel. These beads, as disclosed for example in the aforesaid copending patent application, Serial No. 660,402, may be formed of any suitable sheet material having the requisite stiffness and permanence but sufficiently flexible so that in the small cross section employed, it may be readily bent around corners. For example, such materials are sheet metal or celluloid or various compositions, but sheet metal is preferred for this purpose. Each bead 80 is hollow and open at one side so that it embraces the outer edge of the channel and may be retained thereon by suitable means such as an enlargement running along the outer edge of the channel, formed for example by the use of a relatively large warp strand 81 along each edge of the foundation weave. The bead embraces the enlargement sufficiently tightly to prevent transverse displacement, yet sufficiently loosely so that the bead may slide longitudinally along the edge of the channel when the channel is bent around the corner of a window. These beads not only enhance the decorative effect, but are also of material aid in holding the edges of the channel straight and true and in preventing slight wrinkles or lateral deflection which may otherwise occur.

It will be understood by those skilled in the art that the forms of weaving shown in the drawing are diagrammatic examples on an enlarged scale. In actual use the strands are usually greater in number and spaced closer together than in these diagrams, and it has not been attempted to show all the details of the weave. Those skilled in the art can readily supply the omitted details or vary the details of weaving at will.

While certain embodiments of the invention have been disclosed, it is to be understood that the inventive idea may be carried out in a number of ways. This application is therefore not to be limited to the precise details described, but is intended to cover all variations and modifications thereof falling within the spirit of the invention or the scope of the appended claims.

I claim:

1. A self-supporting textile window channel comprising a foundation weave including metallic reinforcing strands, and cushioning strands interwoven with said foundation weave, said cushioning strands each forming a series of loops lying on a surface of said foundation weave to form a relatively thick padding for cushioning a window embraced by said channel.

2. A self-supporting textile window channel comprising a foundation weave including metallic reinforcing strands, and cushioning strands interwoven with said foundation weave, said cushioning strands each forming a series of loops lying on a surface of said foundation weave with each loop passing over at least two strands of said foundation weave, said loops collectively forming a relatively thick padding for cushioning a window embraced by said channel.

3. A self-supporting textile window channel comprising a foundation weave including weft strands of metallic wire and warp strands of non-metallic material interwoven with each other, and cushioning strands passing under certain strands of the foundation weave and over certain other strands of the foundation weave and forming a series of loops lying on a surface of said foundation weave to provide a relatively thick padding for cushioning a window embraced by said channel.

4. A self-supporting textile window channel comprising a foundation weave including weft strands of metallic wire and warp strands of non-

metallic material interwoven with each other, and cushioning strands each passing under certain of said weft strands and extending over other weft strands and forming a series of loops each extending over at least two of said weft strands and providing a padding for cushioning a window embraced by said channel.

5. A self-supporting textile window channel comprising a foundation weave including weft strands at least partially of metallic wire and warp strands at least partially of non-metallic material, and a group of warp cushioning strands each passing under spaced weft strands of the foundation weave and overlying a plurality of weft strands between each two strands under which it passes, to form a relatively long loop lying on the surface of said foundation weave, said loops of said cushioning strands of said group collectively forming a strip of padding running along an inner face of said channel to cushion a window embraced thereby.

6. A flexible self-supporting window channel capable of being bent up from flat form to a channel-shaped form, and capable, when in said channel-shaped form, of being bent longitudinally around corners of a window embraced by the channel, said channel comprising a foundation weave including reinforcing weft strands of metallic wire, and spaced groups of cushioning warp strands, each of said cushioning strands passing over a plurality of adjacent weft strands of said foundation weave to form loops on the surface of said foundation weave and being caught under weft strands of said foundation weave between said loops, the loops of the strands of each group collectively forming a strip of padding running along a face of said channel to cushion a window embraced thereby, said groups having spaces between them along lines substantially corresponding to corners of said channel when it is in said channel-shaped form.

7. A construction as specified in claim 6, further including a bendable bead of relatively stiff sheet material embracing and slidable longitudinally along an edge of said foundation weave.

8. A self-supporting textile window channel comprising a foundation weave including metallic reinforcing strands, and cushioning strands caught under strands of said foundation weave at spaced points and forming relatively long loops lying on the surface of said foundation weave between said spaced points, certain of said loops lying on one side of said foundation weave and certain other loops lying on the opposite side thereof to form on both sides of said weave a relatively thick cushioning pad.

9. A flexible self-supporting window channel capable of being bent up from flat form to a channel-shaped form, and capable, when in said channel-shaped form, of being bent longitudinally around corners of a window embraced by the channel, said channel comprising a foundation weave including reinforcing weft strands of metallic wire, and spaced groups of cushioning warp strands, each of said cushioning strands passing over a plurality of adjacent weft strands of said foundation weave to form loops on the surface of said foundation weave and being caught under weft strands of said foundation weave between said loops, certain of said loops lying on one face of said foundation weave and others of said loops lying on the opposite face of said foundation weave, said loops forming strips of padding running longitudinally along said foundation weave on both faces thereof, with spaces between the strips along lines substantially corresponding to corners of said foundation weave when it is in said channel shaped form.

10. A construction as specified in claim 9, further including a bendable bead of relatively stiff sheet material embracing and slidable longitudinally along an edge of said foundation weave.

11. A self-supporting textile window channel comprising a foundation weave including weft strands at least partially of metallic wire and warp strands at least partially of non-metallic material, and a group of warp cushioning strands each passing under spaced weft strands of the foundation weave and overlying a plurality of weft strands between each two strands under which it passes, to form a relatively long loop lying on the surface of said foundation weave, said loops of said cushioning strands of said group collectively forming a strip of padding running along an outer face of said channel to cushion a window embraced thereby.

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