Oct. 24, 1933. E. W. M. BAILEY 1,931,881

WINDOW GLASS CHANNEL

Filed May 3, 1932

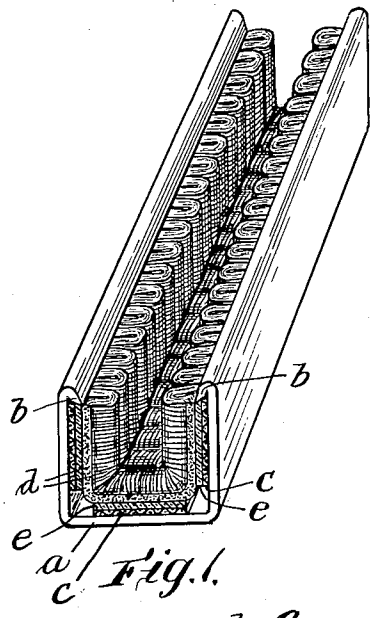

Fig. 1.

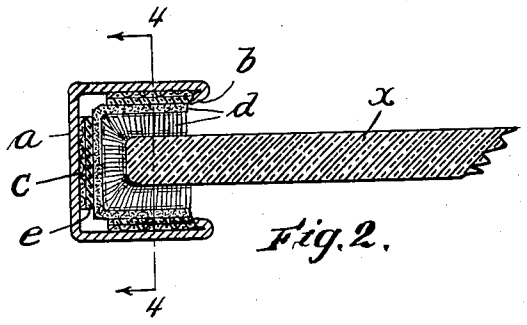

Fig. 2.

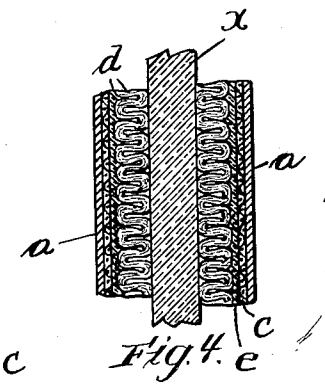

Fig. 4.

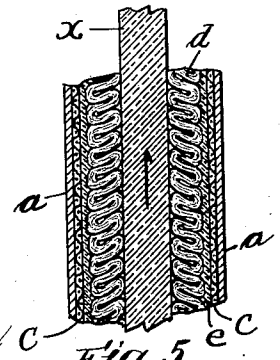

Fig. 5.

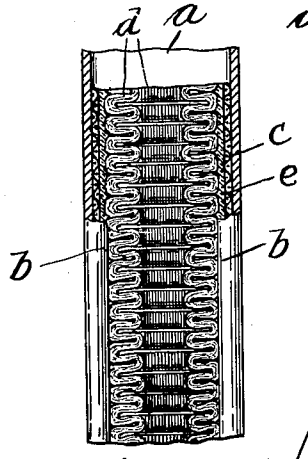

Fig. 3.

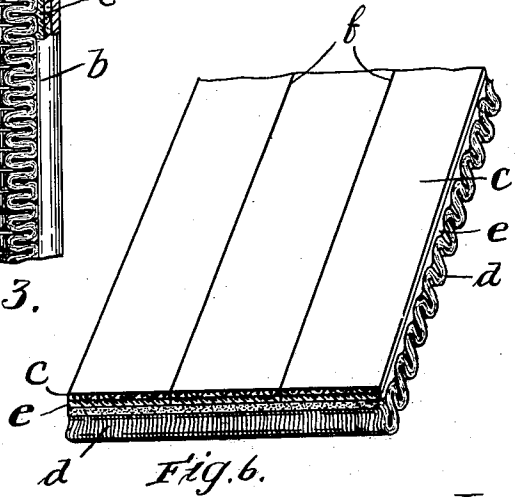

Fig. 6.

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Patented Oct. 24, 1933 1,931,881

UNITED STATES PATENT OFFICE

1,931,881

WINDOW GLASS CHANNEL

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Application May 3, 1932. Serial No. 608,884

3 Claims. (Cl. 296—44.5)

This invention relates to window glass channels, or guides which are primarily designed for use in connection with the window glass of closed body automobiles, and more particularly to means employed in this connection for cushioning the glass against shock and for providing suitable surfaces on which the glass, which is usually frameless, may slide.

For many years the cushioning material which has been principally employed in lining window glass channels of automobile bodies, aside from the all metal guides, has been of three different types, viz, heavy velvet, (in which the vertical pile on a backing is directly engaged with the glass,) felt, and rubber, the latter frequently being covered with a textile fabric. Each of these types of material have vital objectionable features, some of which are as follows. Velvet is objectionably expensive, and particularly so when its pile is sufficiently heavy or long to afford an effective cushioning action. Also the pile of any fabric is liable to become flattened so that it looses its cushioning effect. Felt is likely to become matted, so that it fails to hold the glass firmly enough to prevent rattling.

Moreover, where material is employed in this connection which has a vertical pile of considerable length or height, it is practically necessary to remove the pile along the lines at which the material is bent, to permit the same to be closely fitted into the corners of the channel and to prevent the pile from being compressed too closely at these points. As this operation is somewhat expensive, it substantially increases the cost of installation.

Rubber, if employed for the above purpose, usually must be covered with a fabric, and does not provide as satisfactory cushioning effect as is desired.

The objects of my invention are to provide a window glass channel having a lining which will effectively cushion the glass, so that it will be unlikely to become broken by the shocks to which it is likely to be subjected, and which will provide anti-frictional surfaces on which the glass will slide freely without lubrication, and will not become worn appreciably by use, or become matted or bent down, so that its cushioning effect will be impaired. Also to provide a lining which is not objectionably expensive to manufacture, or to install.

I accomplish these and other objects of my invention by providing a cushioning lining which consists of a mat of hair, or other resilient fibrous material, the fibers of which have been combed, or otherwise operated on, so that they mainly extend in the same general direction, said mat being gathered into uniform folds, or plaits, which extend transversely of the fibers, and then being vulcanized or cemented onto a fabric backing, after which it is cut into strips of a width corresponding to the width of the inner surfaces of the channel, with the side edges thereof perpendicular to the plaits, said strips then being mounted in the channel so that the plaits will extend transversely thereof and their bent over ends opposite the backing will be engaged with the glass and provide a cushioning support therefor.

For a more complete disclosure of the invention reference is made to the following specification in connection with the accompanying drawing, in which:

Fig. 1 is a perspective view of a complete window channel embodying my invention and adapted for installation in the groove of a window casing.

Fig. 2 is a cross sectional view thereof.

Fig. 3 is a plan view thereof, partly broken away.

Figs. 4 and 5 are sectional views at line 4—4 of Fig. 2.

Fig. 6 is a perspective view of a section of the lining strip on an enlarged scale, taken at the back side thereof.

According to my invention, I preferably provide a U-form metal channel *a* having its sides perpendicular to the bottom and having the edge portions of its sides bent inwardly to form retaining lips *b*, said channel being adapted to be mounted in the usual grooves of a window casing.

I further provide a cushioning lining for said channel, which comprises a backing *c* of thin stout fabric and on which a mat *d* is mounted, said mat being formed from hair or other fibrous material which has been combed or otherwise subjected to an operation which straightens the hairs, or fibers and causes them to lie so that they mainly extend in the same general direction. The mat thus formed is gathered into a series of folds or plaits of equal length which extend crosswise of the fibers in parallelism, thereby forming the mat into a series of loops, which are alternately oppositely disposed and have rounded ends, the rounded ends of the loops at one side of the mat being connected to the backing by any suitable means, preferably by a vulcanizing process, a thin sheet of rubber *e* being interposed between the mat *d* and the fabric *c* and subjected to the action of heat, so that the backing and mat become permanently attached. A cementing process may

also be employed for this purpose or a combination of a vulcanizing and cementing process.

The sheet, thus formed is then cut into strips which are of uniform width, corresponding to the width of the inner surfaces of the channel and have their side edges perpendicular to the plaits in the mat. The backing of each strip, formed by the fabric *c* and rubber sheet *e* is then cut entirely through to the mat *d* by two parallel slits *f*, as shown in Fig. 6, said slits being located at equal distances from the longitudinal edges of the strip in positions corresponding to the depth of the channel *a*, forming the backing into three separate strips. The mat *c* is then bent into channel form along the lines of the slits *f* and placed in the metal channel, so that the intermediate backing strip portion between the slits rests directly on the bottom of the channel and the other two portions thereof engage its sides with the edges thereof engaged with the inner sides of the lips *b*, as shown in Figs. 1 and 2. The backing may be adhesively or otherwise connected to the inner surface of the channel and preferably the lips *b* will be pressed into clamping engagement with the edges of the backing, so that it will be securely held in position therein.

As thus arranged in the channel, the mat of fibrous material which is mounted on the backing is formed or gathered into plaits which extend cross wise of the channel, and, as the fibers have considerable resiliency, the end portions of the plaits are rounded in the form of loops and a narrow open space is provided within each loop, and, although the adjacent loops are in contact, an open space is provided between them adjacent their rounded ends, so that, when the edge portion of a glass plate, as *x*, having flat sides and a straight edge, is inserted in the channel, as shown in Figs. 2 and 4, the flat or straight surfaces of the glass will bear against the rounded ends of the loops, which will be spread or flattened according to the variations in thickness and width of the glass plate.

When the glass plate is moved in a runway constructed as above described, the loops or plaits will bend in the direction in which it is moved, as indicated in Fig. 5, and as each loop may be bent to a limited extent independently of the others, but is held against movement at its base, crowding of the material into bunches so as to cause binding cannot occur. As the glass plate is supported in the runway by the ends of the loops, it will be effectively cushioned thereby, as the loops have considerable resiliency, so that breakage from ordinary shocks is effectively prevented.

The cushioning effect secured by forming the fibers in loops is more effective and less likely to become deteriorated than if the fibers merely projected from the backing in the form of a vertical pile, as the fibers are supported at the points of contact with the glass, each by another, as well as by the backing, and resist pressure, both transversely and longitudinally of the channel, more effectively than single fibers supported only at one end.

As previously stated, before the strip of cushioning material is placed in the channel, the backing of the strip is cut entirely through to the mat *c* along lines corresponding to the corners of the channel. As shown in Figs. 1 and 2, when the strip is bent along the lines of these slits, the cut edges become separated to a substantial extent, as there is nothing to prevent transverse spreading of the mat at this point. Consequently, the tendency to compress the mat at the bend, by the bending operation, will merely result in the spreading of the mat transversely, at a point where it has practically no cushioning action. A saving in the width of the strip necessary to line a channel of a certain size is thus made over that necessary to line a channel of the same size with material of the character in which it is necessary to remove the pile along the lines at which it is bent to fit into the corners of the channel. Moreover, if the backing of the latter material were slit, the strip would be completely separated along the line of the slit, but with the material employed according to my invention, although the fibers in the mat portions are combed, so that they largely run in a direction transverse to the folds therein, they are more or less interlocked or intertwined, so that the mat does not become separated along the lines of the slits and the strip remains whole, even though the backing has been slit completely through to the mat.

While the above described lining may be most conveniently and advantageously employed in connection with a metal channel such as that above described, it may be employed directly in the channel groove of a window casing.

By forming the cushioning mat, which directly engages the glass, of hairs, or similar fibers, in which practically all the hairs run in one direction, and arranging the mat in the channel, so that the hairs extend in the direction in which the glass slides and by gathering the mat into plaits which extend transversely of the channel, the glass is not only effectively cushioned, but a series of anti-frictional surfaces are provided on on which the glass freely slides with substantially less frictional resistance than with many of the cushioning materials which have previously been employed, so that lubrication of the engaged surface is unnecessary, while, at the same time the wearing qualities are very satisfactory.

I claim:

1. A window glass channel comprising a bottom and supporting side walls spaced from the glass and having a cushion on the inner faces thereof composed of a mat of resilient fibers mainly arranged to extend longitudinally of the channel and gathered in transversely extending uniform folds to form alternately oppositely disposed, yieldable loops of equal height, and a backing of flexible sheet material interposed between said mat and said inner faces and having the ends of the loops at one side of the mat connected thereto, the ends of the loops at the opposite side of the mat being arranged for engagement with the glass, and said backing being slit longitudinally at the corners of the channel and said folds being extended continuously across said slit portions.

2. A window glass channel having a bottom and oppositely disposed sides spaced from the glass, a series of three separate strips of sheet material respectively disposed on the surface of each side and on the bottom of said channel, and a cushioning mat secured on the inner surfaces of said strips and extending about the edge portion of the glass, said mat being composed of resilient fibers mainly extended longitudinally of the strip and gathered in plaits which extend transversely of the strips and continuously between the same, to provide resilient loops for engagement with the glass.

3. A window glass channel having a bottom

and oppositely disposed sides spaced from the glass, a cushioning lining on the inner surfaces of said channel comprising a continuously formed mat of resilient, somewhat intertwined fibers mainly arranged to extend longitudinally of the channel and gathered in uniform plaits which extend to transversely of the channel to provide a series of oppositely disposed and alternately arranged loops, and a backing composed of sheet material permanently connected to the ends of the loops at one side of said mat, and separated into three strips, one of which is disposed on the surface of each side and the other on the bottom of the channel, the adjacent edges of said strips being held out of contact with each other and being connected by the adjacent portion of the mat without substantial increase in density of the connecting portions thereof.

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