Sept. 18, 1956 P. E. CLINGMAN 2,763,346

CONNECTOR STRIP

Filed June 9, 1953

2 Sheets-Sheet 1

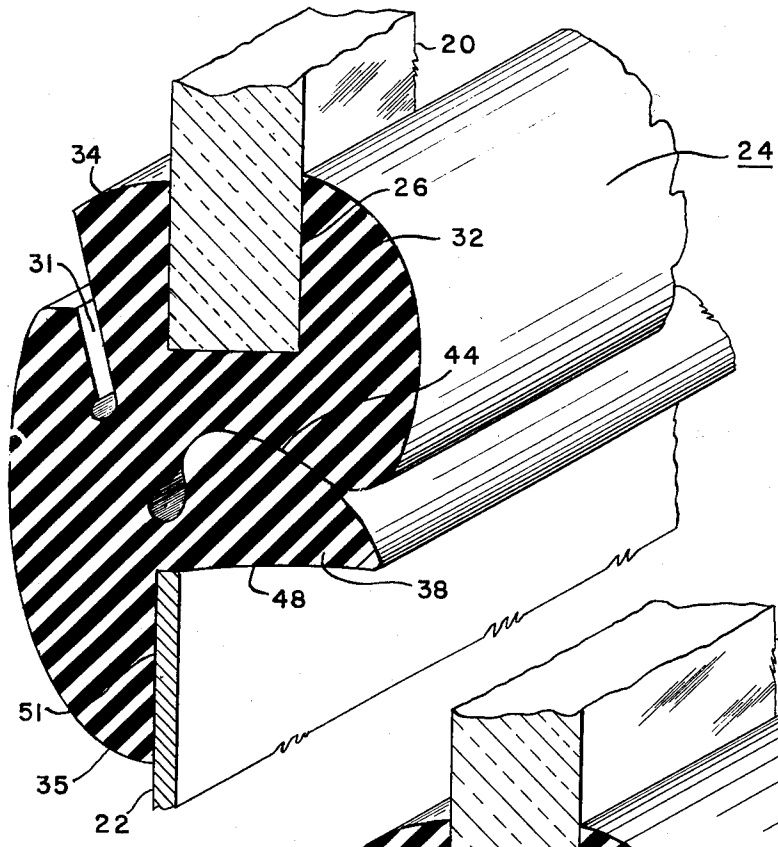


Fig. 1

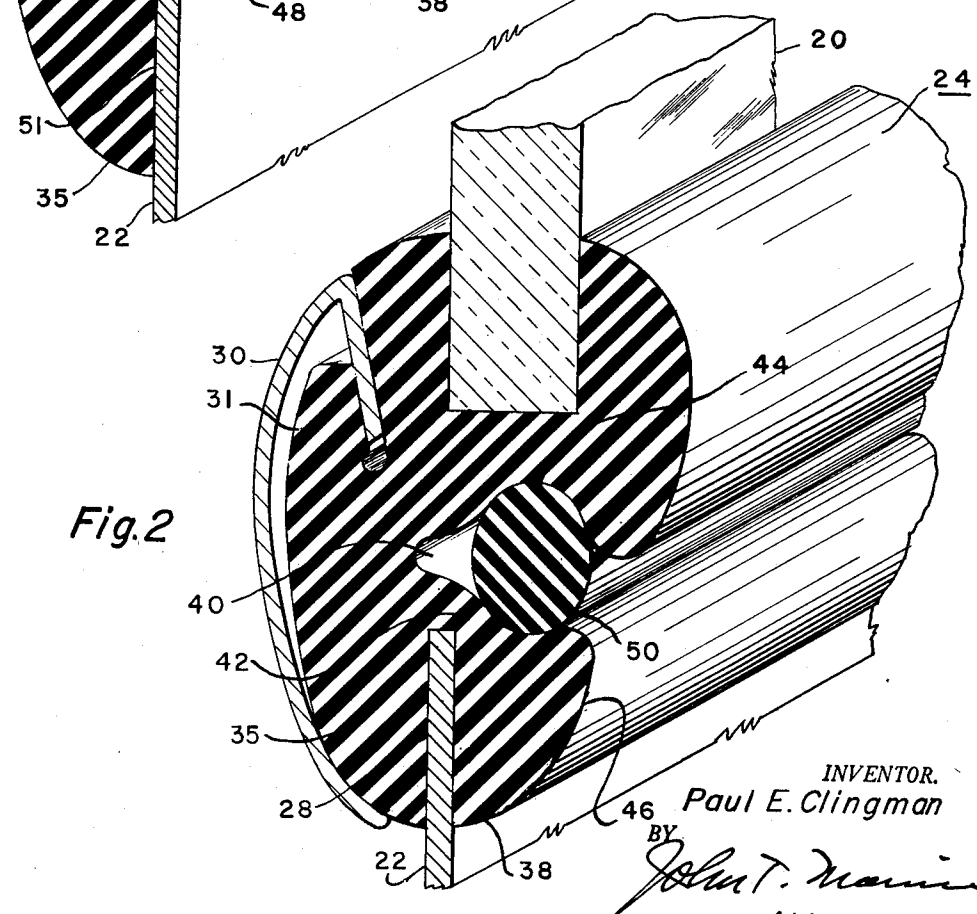


Fig. 2

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CONNECTOR STRIP

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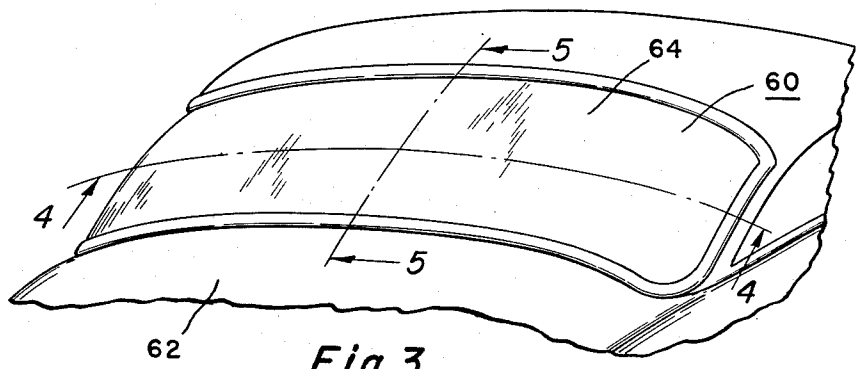


Fig. 3

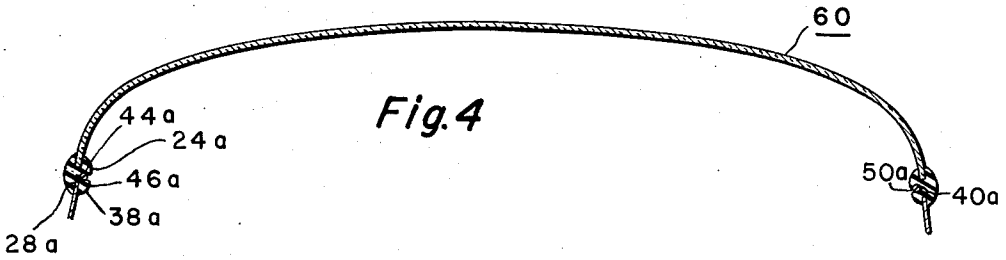


Fig. 4

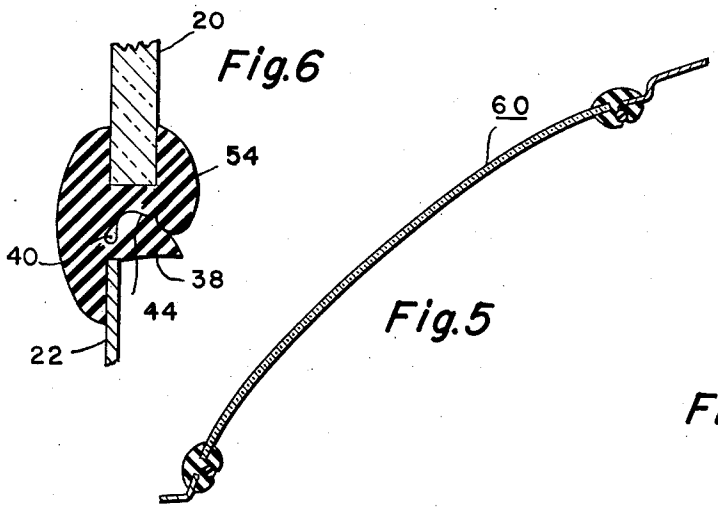


Fig. 6

Fig. 5

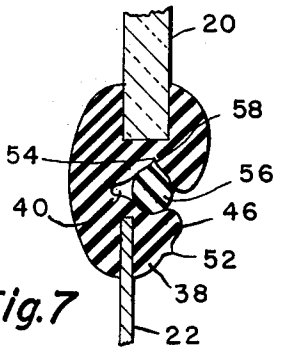


Fig. 7

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2,763,346

CONNECTOR STRIP

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Application June 9, 1953, Serial No. 360,475

4 Claims. (Cl. 189—78)

This invention relates to elastomeric strips and more particularly to elastomeric strips adapted to sealingly connect sheet-like panels in an edge to edge relation.

Various forms of mounting strips are now used for connecting sheet-like panels, examples of these being disclosed in Eichner Patent 2,189,138, and Geyer Patent 2,492,566, both assigned to the assignee of the present invention. While strips of this type have been found satisfactory in many instances, difficulties have been frequently encountered in attaching the strips in position upon the connecting curved panels and particularly when the panels are of relatively large size.

This invention is directed to an improved mounting strip which can be more effectively assembled between the panels to be connected and thereafter provide a uniformly tight and leak-proof seal between the connected parts. Another strip of a somewhat similar type herein contemplated is shown in patent application Ser. No. 360,474 which has been assigned to the assignee of the present invention.

In carrying out this objective the body of the strip is provided with integral means for holding a portion of the strip in a retracted position when the portion is pivoted on an integral hinge to provide a free passage for an edge of a panel into a panel receiving groove formed in the strip during the assembly of panel and strip means for holding the strip in sealing engagement with the panel after the connection is formed.

Another purpose of the present invention is to provide a sealing strip of elastomeric material wherein a lip portion forming one of the walls of one of a pair of opposed longitudinally extending grooves each adapted to receive edge portions of parts to be joined therein is forced into a sealing engagement with the part when a filler strip is inserted in a third longitudinally extending groove formed in the body of said strip between said opposed grooves and bears against a portion of the lip to force said wall portion thereof into tight sealing engagement when a margin of a part associated therewith and wherein said strip includes an integral means for holding said lip portion in a retracted position whereby the wall portion thereof is held at an angle to open the groove whereof it is a part, said holding means comprising a thin hinge-like section of elastomeric material whereon the lip is pivoted to a retracted position and correspondingly shaped surface portions on the third groove and a surface portion of the lip respectively that are adapted to frictionally engage one another maintain the lip in its retracted position whereby the part holding groove is held open for permitting unimpeded assembly of the strip and part therein.

Another advantage embodied in the present invention is to provide a sealing strip particularly adapted to be used in connection with automotive bodies and the like, which strip acts as a joining and sealing means between the body and the windshield or the rear window of the automobile and has a portion thereof adapted to be held in a retracted position, to permit a margin of one part to be joined by the strip to readily pass into a groove during assembly of a part and the strip.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings wherein a preferred embodiment of the present invention is clearly shown.

In the drawings:

Fig. 1 shows a cross-section view in perspective of a sealing strip with a portion of a groove therein opened for receiving a part.

Fig. 2 is a cross-section view in perspective of a strip in Fig. 1 with a part joined and sealed therein.

Fig. 3 in perspective shows a rear window of an automobile as joined and sealed to a body portion with a strip according to the present invention.

Fig. 4 is a sectional view taken on line 4—4 in Fig. 3.

Fig. 5 is a sectional view taken on lines 5—5 in Fig. 3.

Fig. 6 shows a cross-sectional view of one modification of a sealing strip with a portion of a groove opened for receiving a part therein.

Fig. 7 is a cross-sectional view of the strip shown in Fig. 6 with the strip in a part engaging position.

Sealing or connecting strips are widely used, particularly in the automotive field as a means for joining and sealing edges of parts. One of the most common usages of such connecting or sealing strips is in connection with automobile bodies wherein the strip not only joins the glass portion to the body but also seals the glass and the body against the elements. Examples of this type of strip are shown in a patent to R. H. Chilton 2,623,250 and John T. Marvin 2,654,919, assigned to the assignee of the present invention. It is apparent this type of mounting is very economical and is adapted to permit the replacement of a pane of glass when required. It has been found that the installation of glass within sealing strips of this type is often difficult, particularly in the modern automotive vehicles wherein a large pane or sheet of curved glass forming the rear window or windshield of the vehicle, as shown in Fig. 3, is inserted in aperture in the vehicle body. To accomplish this connection various expedients have been used to hold open the grooves during the assembly of the parts. One of these methods has been to assemble the strip around the body opening, circumferentially wrap a cord under tension about one of the lips of the glass receiving groove so as to maintain the groove in an open position so that the glass or panel may be inserted therein and then remove the cord to permit closing of the groove.

The present invention is directed to the elimination of difficulties of forming this connection by using a sealing strip wherein the particular configuration of certain portions of the strip permits a panel receiving groove to be maintained in an open position during assembly of the glass panel within the vehicle body.

In the form shown in Fig. 1, the connector strip 24 of elastomeric material has a uniform cross-section throughout its length and is adapted to mount margins of a glass panel 20 upon a margin of a relatively thin metal panel 22, for example the curved rear window or windshield in a suitable aperture in an automotive body as shown in Fig. 3. A garnish molding 30 is provided if desired to furnish an ornamental appearance to the strip when it is in place on the vehicle which molding is adapted to be attached to the strip by means of groove 31.

The body portion 24 of the strip has two pairs of lip portions 32 and 34 of one pair forming a panel 20 receiving groove 26 and the portions 35 and 38 oppositely disposed to lips 32 and 34 arranged to form another groove 28 that is in opposed relation to groove 26 and adapted to receive a margin of panel 22 therein. A

third groove 40, located between opposed grooves 26 and 28, preferably extends into the main body portion of strip 24 beyond a projection of either of the opposed grooves 26 and 28 is shaped and located to provide a thin section 42 of resilient material between groove 28 and groove 40 to form a longitudinally extending flexible hinge portion around which lip 38 may be pivoted without hindrance. A surface 44 formed on the upper inner surface of groove 40 is shaped to have a corresponding configuration to the outer surface portion 46 of lip 38 and is arranged to form a nested frictional engagement therewith and maintain the lip 38 in a retracted position when the lip 38 is pivoted on hinge portion 42 into the position shown in Fig. 1. When lip 38 is in this position a surface 51, forming one wall of groove 28, will be substantially at right angles to a surface 48 on lip 38 which forms another portion of groove 28 so as to open groove 28 and permit a panel 22 to be readily passed without hindrance therein. When the lip 38 is released from this position it pivots downwardly to bring surface 48 in engagement with panel 22 so that a filler strip 50 of flexible material may be inserted in groove 40 to bear against and force lip 38 into tight sealing engagement with panel 22.

In Figs. 6 and 7 a modification of the above strip is shown wherein lip 38 is securely maintained in groove 40 when a rib portion 52 formed on lip 38 is received in a notch portion 54 formed in the surface 44 of groove 40 to hold the lip 38 in a retracted position when surfaces 44 and 46 frictionally engage each other and rib 52 seats and locks within notch 54. In the embodiment shown a filler strip 56 may be provided with a ridge 58 that is adapted to be received in notch 54 thereby improving the locking engagement therebetween and more securely maintaining the filler strip with groove 40. It is apparent that this structure of the filler strip 56 is optional and that when used may be constructed and arranged for increasing the locking thereof in groove 40 and increase the bearing pressure of lip 38 against the part.

In Figs. 3, 4 and 5 of the drawings, a curved pane of glass 60 of substantial size is shown as mounted in an aperture 64 of a body portion 62 of an automobile. This pane of glass may be readily installed in aperture 64 if a strip according to the present invention is employed. The strip may first be applied to the peripheral portion of the glass panel 60 to form a circumferential boundary therefor. Surface 46A of lip portion 38A may then be placed in a retracted position in groove 40A so that groove 28A is opened and has its walls at right angles to each other. The pane of glass 60 and its attached strips 24A may then be readily inserted within the aperture 64 of the body 62 and when in position will be secured therein when the lip 38A is released from its engagement in groove 40A and a filler strip 50A is applied to bear against lip 38A and thus join the panels of the respective parts. It is readily apparent that the installation procedure may be reversed so that the strip is first applied to the body 62 of the vehicle and the glass pane 60 may be installed in a suitable glass receiving groove held open in a manner heretofore described.

It is manifest that the material of the sealing strip may be of any suitable elastomeric material, such as, rubber, synthetic rubber, such as butadiene-styrene copolymers, butadiene-acrylonitrile copolymers, polychloroprene, compatible mixtures of the above materials, plastic compounds, such as, certain of the vinyls, etc., the only requirements being that the material is sufficiently springy and rubberlike so that it will be stretched so as to permit unimpeded movement of the thin hinge portion and to form a satisfactory interlock with the material of the filler strip which may be of the same material as the main body strip or any other material suitable for forming a locking engagement within the groove in the elastomeric part and for deforming portions thereof so as to provide a tight seal between the strip and the panel. Strips of this character may be made by molding or extrusion or any other satisfactory production method and may be compounded so as to form any color combination desired. Further the strip may be used to join two panels of wood, metal, glass, etc., or any combination thereof, the use of such strips not being limited to glass metal combinations alone. It is understood that variations in width of grooves must be carried out to meet specific installation requirements.

While the embodiment of the present invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted.

What is claimed is as follows:

1. In an elastomeric sealing strip having two pairs of lips defining a pair of oppositely disposed grooves on opposite sides of a strip body that are adapted to sealingly connect margins of panels to be joined therein a means for holding one of said lips in a retracted position for facilitating the assembly of the strip and panel and a separate means for holding said one lip in a panel engaging position, said first mentioned means comprising; a lip hingedly joined to said strip body, a surface portion having a predetermined configuration on said lip and a surface portion on said body adapted to interlockingly engage said surface on said lip when said lip is in said retracted position.

2. The sealing strip as set forth in claim 1 wherein a continuous longitudinally extending notch portion is provided on one of the complementary surfaces and a continuous longitudinally extending rib is provided on the other surface whereby said rib is received in said notch for holding said lip portion when said lip is at right angles to said other grooves.

3. A sealing strip adapted to seal and join two sheet-like parts, comprising a longitudinally extending body portion of elastomeric material of uniform cross section, having a pair of longitudinally extending lips extending along one edge of said body and a second pair of longitudinally extending lips extending along another edge and substantially 180° removed from said first pair of lips, said pairs of lips providing a pair of opposed grooves at opposite sides of said body extending longitudinally throughout the length thereof that are adapted to sealingly connect margins of panels to be joined therein, the groove formed by the first pair of lips being wider than the groove formed by the second pair of lips and having one longitudinal edge thereof substantially in the same plane as one edge of said second groove, a third longitudinally extending groove disposed between one of the lips of each pair of lips on one side of said body, a separate means insertable into said third groove for holding both of the lips on said one side of said body in a panel engaging position, and a means for holding one of the lips on said one side of said body in a retracted position for facilitating the assembly of the strip and panel, said means comprising; a resilient hinge connection between the body and the lip to be retracted, a surface portion of predetermined configuration including a rib on said retracted lip and a surface portion of predetermined configuration including a notch on said third groove adapted to interlockingly engage said surface on said one lip when said lip is in said retracted position.

4. An elastomeric sealing strip for sealing and joining adjacent margins of two sheet-like parts, comprising in combination, a main body strip of elastomeric material having a pair of continuously extending longitudinal lips integrally formed defining a continuous longitudinally extending groove therebetween for snugly receiving a margin of one of the sheet-like parts therein, a second pair of continuous longitudinally extending lips in opposed relation to said first pair of lips defining a second continuous longitudinally extending groove in opposed relation and opposite to said first groove for snugly receiving a second sheet-like part therein, a third continuous longitudinally extending groove oriented substantially at

right angles to and extending inwardly into said body portion beyond a projection of said opposed grooves, said third groove being formed of surface portions of one lip of each pair of lips on one side of the body, a separate means insertable into said third groove for holding both of the lips on said one side of said body in a panel engaging position, and a means for holding one of the lips on said one side of said body in a retracted position for facilitating the assembly of the strip and panel, said means comprising; a surface portion of predetermined configuration including an enlargement on said one lip and a surface portion of predetermined configuration cooperable with said enlargement on said third groove adapted to interlockingly engage said surface on said one lip when said lip is in said retracted position.

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