

April 1, 1941.

J. S. REID

2,237,059

SEALING STRIP

Filed March 20, 1937

2 Sheets-Sheet 1

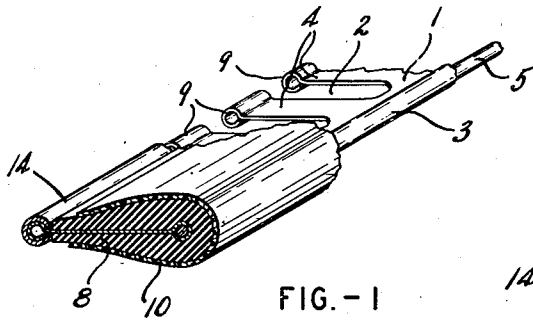


FIG. -1

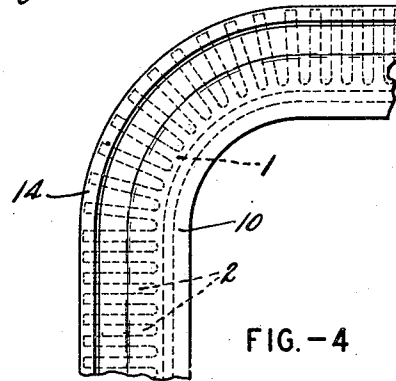


FIG. -4

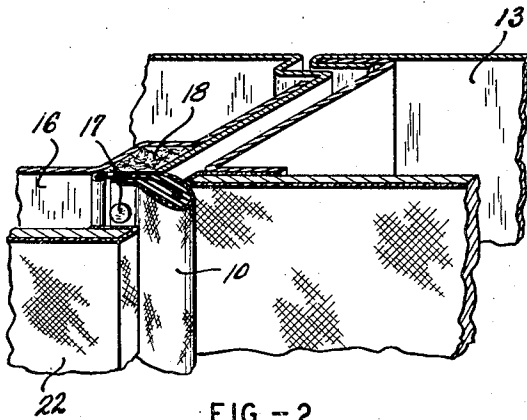


FIG. -2

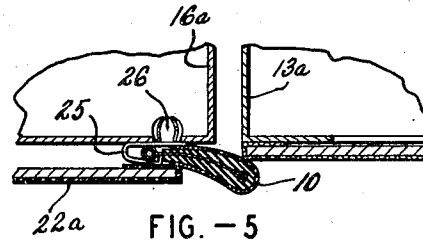


FIG. -5

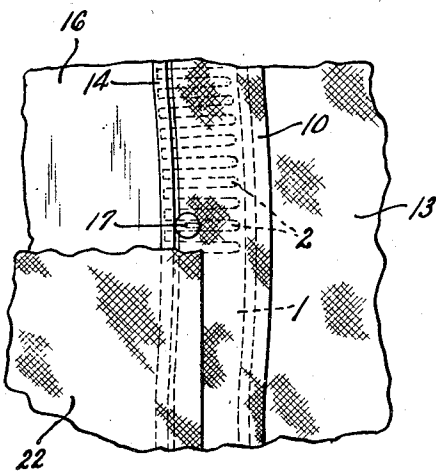


FIG. -3

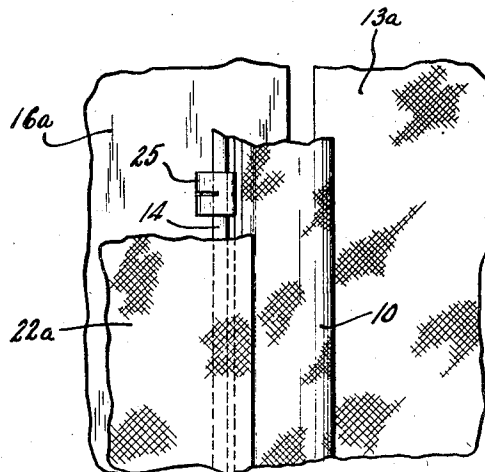


FIG. -6

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SEALING STRIP

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2 Sheets-Sheet 2

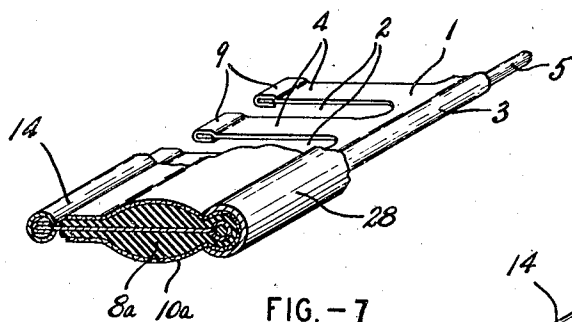


FIG. -7

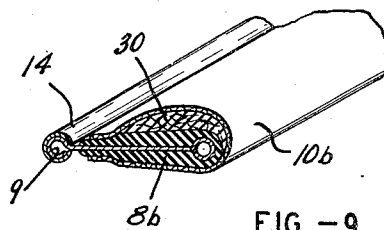


FIG. -9

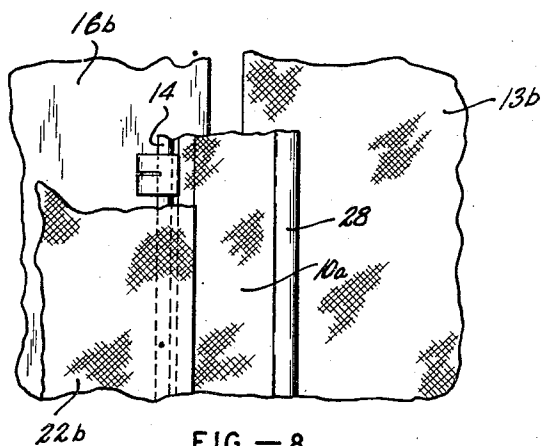


FIG. -8

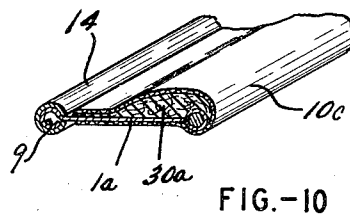


FIG. -10

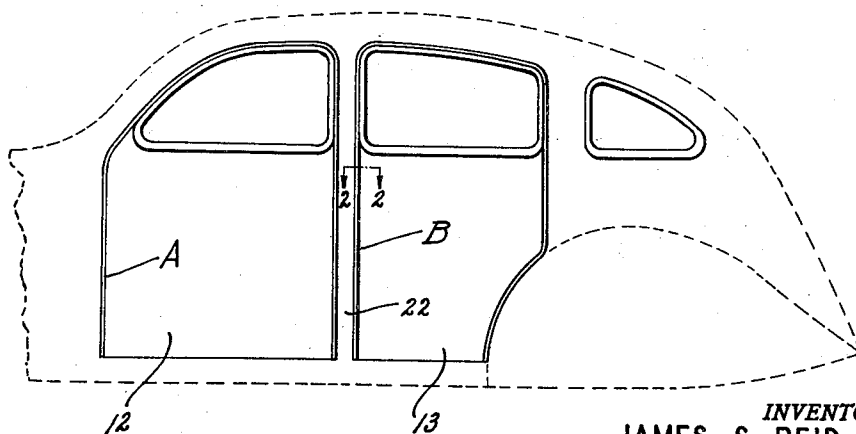


FIG. -II

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2,237,059

SEALING STRIP

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Application March 20, 1937, Serial No. 132,109

1 Claim. (Cl. 20—69)

This invention relates to improvements in sealing strips and more particularly, in that type of strip, frequently referred to as windlacing, which is arranged at the edges of the door openings of automobiles and the like for sealing engagement with the doors for such openings.

The general object of the present invention is the provision of an improved inherently resilient sealing strip of the type specified, said strip being of such simple and inexpensive construction that it can be made and sold at low cost, and of such improved form and character that it is of increased effectiveness in the sealing of such door openings.

A more specific object of the present invention is the provision of an improved sealing strip which includes a generally flat and inherently resilient sheet metal body member of strip form, said body member being transversely slotted throughout its entire length, with said slots extending from points adjacent one longitudinal edge portion of such body member, an edge portion which is of continuous character and preferably of beaded form, through the other longitudinal edge portion thereof, with the result that such body member is provided throughout its entire length with transversely disposed and longitudinally spaced free-ended tongues, thereby enabling said body member to be readily bent longitudinally or edgewise in securing the present improved sealing strip along curved or irregularly shaped edge portions of door openings, all as will hereinafter more fully appear.

Another more specific object of the present invention is the provision of a sheet metal bead for the reception of the free ends of the transverse tongues of the sheet metal body member of the present improved sealing strip, said tongues having limited sliding movement relative to one another within such bead, so that such bead does not interfere in any way with the longitudinal or edgewise bending of such body member, the function of such bead being to maintain the free ends of the body member tongues in alignment, and thus insure that the attaching portion of the sealing strip will lie flat, and also, to aid in the securement, or in the maintenance of such securement, of such strip attaching portion to the structural parts of the automobile body or the like along the edges of the door openings thereof, all as also will hereinafter more fully appear.

Another more specific object of the present invention is the provision of an improved sealing strip having especially effective, durable and

attractive yieldable means for door sealing engagement, the nature, form and arrangement of such means all contributing to make it of improved character.

Another more specific object of the present invention is the provision of an improved sealing strip in which the sealing portion of the strip, a portion which in use of the strip is exposed for door-engaging sealing purposes, is provided with a longitudinally disposed ornamental bead, of stainless steel or the like, which materially enhances the general attractiveness of the sealing strip without interfering in any way with its sealing effectiveness.

Further objects of the present invention will appear, and the objects thereof heretofore referred to will be more fully understood, from the following description of several embodiments of such invention, reference being had to the accompanying drawings, in which

Fig. 1 is a perspective view of a short length of one form of the present improved sealing strip, a portion of the sheet metal body member thereof being completely exposed so that the construction of such member may be fully shown; Fig. 2 is a perspective view, in the plane of line 2—2 of Fig. 11, of a portion of one of the pillars and a portion of one of the doors of an automobile body, the attaching portion of the sealing strip of Fig. 1 being tacked to such body pillar for sealing engagement with such door; Fig. 3 is a view of the parts of Fig. 2 as they would be seen from inside the automobile body, a portion of the upholstery material for the body pillar being broken away to show the attaching portion of the sealing strip and the view illustrating how the tongue-receiving metal bead of such strip attaching portion would prevent detachment of the strip, even though some of the attaching tacks extend through the body member slots rather than the tongue thereof; Fig. 4 is a side view of a short length of the sealing strip of Fig. 1 bent longitudinally or edgewise into curved form and illustrating the position of the body member tongues within the alignment-maintaining sheet metal bead therefor; Fig. 5 is a cross-sectional view showing the use of metal clips for securing the attaching portion of the sealing strip of Fig. 1 to the body pillar of an automobile; Fig. 6 is a view similar to Fig. 3, but showing the parts of Fig. 5, including the strip-attaching metal clips; Fig. 7 is a perspective view, similar to Fig. 1, and showing a modified form of the present improved sealing strip; Fig. 8 is a view similar to Fig. 6, but showing the

sealing strip of Fig. 7; Figs. 9 and 10 are perspective views of short lengths of improved sealing strips embodying other forms of the present invention; and Fig. 11 is a diagrammatic view of a portion of an automobile body, along the edges and across the tops of the door openings of which sealing strips embodying the present invention are arranged for door-sealing engagement.

Before explaining in detail the present invention, it is to be understood that such invention is not limited to the details of construction and/or the arrangement of parts herein illustrated and/or described, inasmuch as the invention obviously may take other forms. It also is to be understood that the phraseology or terminology herein employed is for the purpose of description and not of limitation, as it is not intended that the invention herein disclosed and claimed be limited beyond the requirements of the prior art.

As indicated in the accompanying drawings, the present improved sealing strip, in all of the forms thereof illustrated in such drawings, includes a generally flat and inherently resilient sheet metal body member 1 of strip form, said body member being transversely slotted, as at 2, throughout its entire length. As best shown in Figs. 1 and 7, said slots extend from points adjacent the longitudinal edge portion 3 of such body member, an edge portion which is of continuous or non-slotted character, through the other longitudinal edge portion thereof, with the result that such body member is provided throughout its entire length with transversely disposed and longitudinally spaced free-ended tongues 4. Preferably, the continuous or non-slotted longitudinal edge portion 3 of the body member is bent or rolled into beaded form, as shown, and if desired, a reinforcing wire 5 or the like may be longitudinally positioned within such bead, a construction which not only strengthens the body member but which also facilitates its manufacture.

For sealing purposes, sealing strips embodying the present invention are provided with especially effective, attractive and durable sealing means, the nature, form and arrangement of such means all contributing to make it of improved character. In the embodiment of the invention illustrated in Figs. 1 to 6 inclusive, a layer of rubber 8 is applied, by the use of extruding apparatus or other suitable means, to the sheet metal body member 1 of the strip, said rubber completely enclosing said member except for the free ends 9 of its tongues 4. As clearly shown in Figs. 1, 2 and 5, the layer of rubber 8 is of varying thickness, that portion of the rubber adjacent to and surrounding the beaded continuous edge portion 3 of the body member having the greatest thickness, so that the sealing strip of Figs. 1 to 6 inclusive is of generally pear shape in cross section, as best shown in Fig. 1. Such thickened edge portion of the sealing strip, namely, that portion which includes the beaded continuous edge portion 3 of the body member 1, constitutes the sealing portion of the strip, the attaching portion thereof being that edge portion which includes the free ends 9 of the body member tongues 4, as will hereinafter more fully appear. To protect the rubber 8 and to give the sealing strip an attractive appearance, in harmony with the upholstered interior finish of the automobile body, a flexible covering 10 is provided for such rubber, said covering being of any suitable material, such as cut or uncut pile fabric, leather and the like. If a covering with a pile surface

is utilized, the sealing efficiency of the strip may be somewhat increased, as will be readily understood, although the present sealing strip has sufficient inherent resiliency to cause its sealing portion to firmly engage a door for effective sealing purposes, even though the outer covering of such strip is of smooth material, such as leather or the like.

Because of the transversely slotted character of its sheet metal body member, each form of the present improved sealing strip may be readily bent longitudinally or edgewise, with the result that such strip may be readily given a shape, longitudinally, corresponding to that of the edge portions of the door openings along which it is secured in use thereof. As is well known, the doors and the door openings of present day automobiles are not of simple rectangular shape with square corners, as they formerly were, but are of irregular shape, with rounded or curved upper corners, as shown in Fig. 11. Regardless of the particular shape of an automobile door opening, however, a single piece or section of the present improved flexible and bendable sealing strip may be arranged along both sides and across the top of such door opening, there being shown in Fig. 11 a single piece or section of a sealing strip A associated with the right front door opening for sealing engagement with the door 12 therefor and a single piece or section of a sealing strip B associated with the right rear door opening for sealing engagement with the door 13 therefor. Each such strip piece or section may be given its particular shape either before or at the time of its application to the automobile body, although in practice, the sealing strip will be cut into proper lengths by the manufacturer thereof and sent in straight form to the manufacturers of the automobiles or automobile bodies and thereafter bent into the desired shape or shapes in the production lines thereof, all as will be readily understood.

In order to effect and maintain alignment of the free ends 9 of the body member tongues 4, and thus insure that the attaching portion of the sealing strip will lie flat, for proper covering and concealment by the upholstery or the like of the automobile body, as will hereinafter more fully appear, a suitable sheet metal bead 14 is provided for the reception of such tongue ends. Within such bead, the free ends 9 of the tongues 4 may slide relative to one another as the strip is longitudinally or edgewise bent, so that the use of such an alignment-maintaining bead does not interfere in any way with such bending of the strip. In Fig. 4, there is shown a short length of the present improved sealing strip bent longitudinally or edgewise into curved form, for the curved edge portion of a door opening, and the increase in or enlargement of the normal spaced relationship of the free end portions of the body member tongues 4 within the bead 14, at the bend in such sealing strip, is quite apparent.

To enable the bead 14 to be properly maintained in such slidable relationship or association with the free ends 9 of the body member tongues 4, such tongue ends preferably are given increased thickness, such as by bending or rolling them into beaded form, as here shown. The beaded free ends 9 of such tongues may be of hollow or tubular character, as in the sealing strips of Figs. 1, 9 and 10, or of closed and somewhat flattened character, as in the sealing strip of Fig. 7.

Any suitable means may be utilized to secure

the attaching portion of the present improved sealing strip along the sides and across the top of the door opening which is to be sealed by the sealing portion of such strip. In Figs. 2 and 3, the attaching portion of the sealing strip of Fig. 1 is shown as secured to the sheet metal pillar 13 of the automobile body of Fig. 11 by suitable tacks 17, a tacking strip 18 of a rubber compound or the like being mounted at one of the inner corners of such body pillar for receiving such tacks. As clearly shown in Fig. 2 and as will be readily understood, the sealing portion of such sealing strip extends across or spans the crack between the automobile door 13 and such body pillar 16 and such strip sealing portion resiliently but firmly engages said door, with the result that there is provided for the opening for such door a particularly effective and durable seal. For appearance purposes primarily, it is the practice to cover and thereby conceal the attaching portions of sealing strips, and an upholstered panel 22 is shown in Figs. 2 and 3 for such purpose.

Because of the use of the bead 14, the free ends 9 of the body member tongues 4 of the present improved sealing strip are effectively maintained in alignment so that they will lie flat against the surface of the pillar 16 or other structural part of the automobile body to which the attaching portion of the sealing strip is secured, as heretofore referred to. As a result, there will be no noticeable displacement of that portion of the upholstered panel 22 or the like which overlies the attaching portion of the present sealing strip. Moreover, the bead 14 effectively prevents detachment of the present sealing strip, even though some of the tacks 17 extend through the slots 3 of the sheet metal body member of the strip, rather than through the tongues 4 thereof. In Fig. 3, such a condition is illustrated, and it will be observed that the bead 14, by its engagement with the tack 17 there shown, effectively prevents detachment of the strip, as will be readily understood.

In Figs. 5 and 6, the use of metal clips is shown for securing the attaching portion of the sealing strip of Fig. 1 to a sheet metal pillar 16a of an automobile body. As there shown, each of such clips includes a generally U-shaped gripping portion 23 for receiving and holding the beaded edge of the strip attaching portion and also includes a transversely slotted head 26 for snap-fastening connection to the inner wall of the body pillar 16a, such pillar inner wall being provided with suitable apertures for the releasable reception of such clip heads. As in Figs. 2 and 3, an upholstered panel is shown at 22a in Figs. 5 and 6 for covering and thereby concealing the attaching portion of the sealing strip and the fastening means by which it is secured in place. The door 13a of Figs. 5 and 6, like the door 13 of Figs. 2 and 3, is yieldingly but firmly engaged by the strip sealing portion, as shown.

In Figs. 7 and 8, a slightly modified form of sealing strip is illustrated, the sealing portion of the sealing strip there shown having clamped or otherwise suitably secured over and along its longitudinal edge an ornamental bead 28, of stainless steel or other suitable ornamental material. As shown in Fig. 8, such ornamental bead extends along the inner surface of the door 13b, adjacent the sides and the top thereof, when such door is in closed position, and such bead materially adds to the inside appearance of the

automobile body. Metal clips, such as shown in Figs. 5 and 6, are shown in Fig. 8 for securing the attaching portion of the sealing strip of Fig. 7 to a sheet metal automobile pillar 16b, the sealing portion, adjacent its ornamental bead 28, of such strip yieldingly but firmly engaging the door 13b.

As in Figs. 2 and 3 and in Figs. 5 and 6, a suitable upholstered panel 22b is shown in Fig. 8 for covering and thereby concealing the attaching portion of the sealing strip of Fig. 7, including the gripping portions of the metal clips there shown. As shown, the sealing means of the sealing strip of Fig. 7, like that of the sealing means of the sealing strip of Fig. 1, includes a layer of rubber 8a and a flexible outer covering 19a of fabric, leather or the like.

In Figs. 9 and 10, two additional embodiments of the present invention are illustrated. In the sealing strip of Fig. 9, inherently resilient hair or bristles 30, such as hogs' bristles, for example, are positioned between the rubber 8b of the strip and the outer flexible covering 19b thereof, on the door-engaging side of the strip sealing portion, with the result that such strip has particularly resilient sealing means. If desired and as will be readily understood, such hair or bristles may be maintained in their entwined or entangled form by coagulated latex.

In the sealing strip of Fig. 10, no rubber is utilized, the inherently resilient hair or bristles 30a being positioned, on the door-engaging side of the sealing portion of the strip, between the sheet metal body member 1a and the flexible outer covering 10c thereof.

If the present improved sealing strip includes rubber, as in those embodiments of the invention illustrated in Figs. 1, 7 and 9, no special adhesive means need be used to cause the flexible outer covering of the strip to adhere to such rubber, as such covering may be applied to such rubber while it is still in a fresh and tacky condition. In the sealing strip of Fig. 10, any suitable adhesive or any other suitable means may be utilized to maintain the flexible outer covering 10c of the strip in proper association with the sheet metal body member 1a thereof, as will be readily understood.

From the foregoing description of the present invention, it is believed that the nature thereof will be clearly understood and the attendant advantages thereof readily appreciated by those skilled in the art to which it relates.

What I claim is:

A sealing strip for the door openings of automobiles and the like, said strip comprising a generally flat and inherently resilient sheet metal body member having a continuous longitudinal edge portion and transversely disposed longitudinally spaced free ended tongues extending therefrom through the other longitudinal edge portion of such body member, the free ends of such tongues being of beaded form, a separate metal bead member for the reception of the free ends of such tongues and adapted to maintain such tongue ends in substantial alignment, door-engaging yieldable sealing means for such body member, such sealing means having a layer of rubber, a flexible outer covering of fabric or the like, and a mass of inherently resilient, loosely entwined or loosely entangled hair or bristles between such rubber and such covering.

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